

# **Air Quality Permit Application**

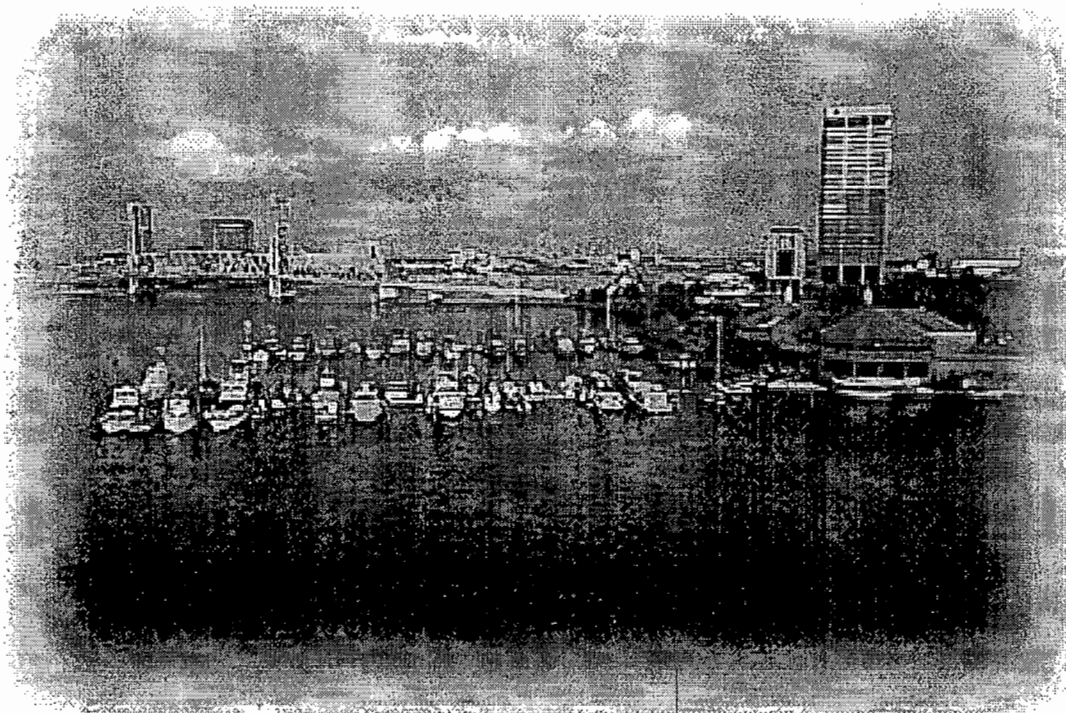
**JEA**

## **St. Johns River Power Park PSD Permit Update**

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**Materials Handling and Storage Operations  
May 3, 1999**

## ATTACHMENTS

| <u>Number</u> | <u>Description</u>                                              |
|---------------|-----------------------------------------------------------------|
| 1             | Revised PSD Permit Tables 2 and 6, 1986 Version                 |
| 2             | Materials Handling and Storage Operations - Allowable Emissions |
| 3             | Figure SJRPP01                                                  |
| 4             | New Table 6 (Parts A, B & C)                                    |
| 5             | Air Construction Permit Application                             |

## 1.0 INTRODUCTION

The St. Johns River Power Park (SJRPP) consists of two steam generating units firing coal and petroleum coke with each producing 679.6 megawatts (MW) of electricity. Associated with the steam generators are the materials handling operations for the raw materials and by-products. These operations include receiving materials by ship, rail, and truck, transporting materials by conveyors and trucks, storage of materials in open piles and enclosed bins or silos, and truck loadout operations. Materials currently handled include coal, petroleum coke, limestone, quick lime, fly ash, bottom ash, and gypsum.

The original Prevention of Significant Deterioration (PSD) air construction permit for SJRPP was issued by the U.S. Environmental Protection Agency (EPA) in 1982. In addition to the PSD permit, SJRPP also received Conditions of Certification under Florida's Power Plant Siting Act from the Siting Board. In 1986, both the PSD permit and Site Certification were amended to reflect design changes to the materials handling operations. Specifically, the revisions reflected the use of an overland conveyor system between the ship unloading area and the plant and enhancements to the coal blending capabilities within the plant. In 1996, the PSD permit was revised a second time to allow the use of up to 20 percent petroleum coke, and materials handling was not addressed.

In 1998, as part of the Repowering Project at JEA's Northside Generating Station (NGS), JEA evaluated the use of the existing SJRPP materials handling operations to support the Repowering Project. During this evaluation, JEA's consultants noted that information provided in the tables attached to the PSD Permit, as revised, did not precisely reflect the current "as built" status of the SJRPP materials handling operations. In addition, review of the historical records related to the PSD permit and Site Certification applications noted short-term and annual coal and limestone throughputs based on an expected capacity factor of 74 percent for the materials handling operations, unlike the boilers which were modelled and permitted based on a 100 percent capacity factor.

The petroleum coke reclaim system and the use of the overland conveyor system to receive and transport limestone from the ship unloader, while authorized by the Department, are not currently reflected in the PSD permit. Potential emissions from the petroleum coke reclaim system have been estimated at 0.7 lb/hr and 3.0 TPY. Potential emissions associated with the use of the overland conveyor system to receive and transport limestone have been estimated at 2.3 lb/hr and 0.96 TPY. No other changes have occurred to the materials handling operations since originally constructed.

JEA would like to update its PSD permit to reflect the comprehensive and complete inventory of emission points associated with the materials handling operations and the maximum potential throughput rates for those operations. As part of the Northside Units 1 and 2 Repowering Project, JEA evaluated the ambient impacts of the materials handling operations based on the comprehensive inventory of emission points and the maximum potential short-term and annual throughput rates (calculated based on the maximum capacities of the boilers and worst-case fuels). The results of the dispersion modeling demonstrated that the materials handling operations at SJRPP will not cause or contribute to a violation of any ambient air quality standard or PSD increment. In addition to the ambient impact analyses, JEA has also reviewed the best

available control technology (BACT) for the materials handling operations and, where appropriate, is requesting lower allowable emissions to levels that are being achieved in practice at SJRPP.

All changes associated with the repowering of the NGS are being presented in a separate PSD application for that project. Revisions to the Title V Operating Permit will be handled following issuance of a revised PSD permit.

## **2.0 PSD APPLICABILITY**

As a new major source, SJRPP underwent all phases of the PSD review process including the application of Best Available Control Technology (BACT) to all emission units proposed under the initial PSD Permit and Site Certification applications. Under the PSD regulations, a physical or operational change to a facility such as SJRPP is subject to PSD review if that change would result in a significant net emissions increase as defined in Rule 62-212.400(2)(e)2., F.A.C. For particulate matter, a significant net increase is equal to or greater than 25 tons per year of total suspended particulate and 15 tons per year of PM<sub>10</sub>.

As stated in the introduction, the only changes made since the materials handling system was originally constructed were authorized by the Department and had potential annual emissions of less than 4 TPY. Moreover, when comparing the potential short-term emissions of the materials handling operations authorized in 1986 versus the "As-Built" systems, including the minor authorized changes, the "As-Built" system actually represents an overall decrease in potential emissions of about 35 lb/hr. The removal of the auxiliary boiler from the list of authorized emission units results in an additional decrease of approximately 25 lb/hr for a total particulate matter decrease of approximately 60 lb/hr.

The materials handling operations for SJRPP are generally reflected in the PSD permit Tables 2 and 6, as revised in 1986, (Attachment 1). The differences between the short term emissions rates information in Tables 2 and 6 and the more comprehensive and complete description of the materials handling operations are shown in Attachment 2. This comparison demonstrates that there will be an overall reduction in potential emissions from those authorized in 1986. For purposes of this update, JEA is requesting that Tables 2 and 6 be taken out of the PSD permit and replaced with a new Table 6. Attachment 3 contains Figure SJRPP01 which provides an overview of the materials handling emission units/activities, emissions, control strategies and monitoring/testing protocol.

For The SJRPP materials handling operations certain emissions units are subject to the following New Source Performance Standards (NSPS) when handling coal and /or limestone:

- 40 CFR 60 Subpart Y - Standards of Performance for Coal Preparation Plants was determined to be applicable to those activities specifically regulated. For the materials handling operations, 40 CFR 60.252(c) limits visible emissions to less than 20 percent opacity. The regulation, although applicable, was noted as less stringent then the EPA's 1982 BACT determination of 10 percent opacity for the materials handling operations.
- 40 CFR 60 Subpart OOO - Standards of Performance for Nonmetallic Mineral Processing Plants was determined to be applicable to those regulated operations which commenced



construction after August 31, 1983. The regulation specifically applies to the overland conveyor system from the ship unloading operations through the new limestone storage pile. The regulation establishes a 10 percent opacity limit on the transfer points which was determined to be as stringent as the existing emission limitation.

For the transfer stations and dust collection systems, JEA is requesting a lower emission limitation of 5 percent opacity and has applied an overall control efficiency of 98 percent to the fugitive dust sources. Specific details of the controls are discussed in subsection 3.2.

### **3.2 Control Technology Review**

For new major sources subject to PSD review, the applicant is required to apply BACT to each pollutant subject to review emitted in a significant amount as specified under Rule 62-212.400(5)(c), F.A.C. For SJRPP, PSD review and BACT were triggered during the initial permitting and a BACT analysis was performed for all particulate matter emissions units and activities. For purposes of updating the PSD Permit, JEA has reviewed the 1986 BACT limits on the materials handling operations. Attachment 2 contains a comparison of the existing materials handling operations versus the 1986 BACT limitations listed in Table 6 of the PSD Permit. Where appropriate lower emission limitations are being requested.

#### **3.2.1 Emission Estimates**

SJRPP activities include operations that handle and store materials such as coal, limestone, quick lime, petroleum coke, fly ash, bottom ash, and gypsum. The limestone, fly ash, and gypsum are associated with the air quality control systems (AQCS) of the two boilers. These operations generate emissions of particulate matter. The handling operations include ship, rail car, and truck unloading, material transport by conveyor belts and pneumatic systems, material transfers (i.e., conveyor to conveyor, storage pile to reclaim hoppers, hoppers to conveyors, etc.) and grinding operations. Storage operations include limestone, coal, petroleum coke, and gypsum storage piles, silos, bins and the ash/by-product disposal area.

This application utilizes emission estimates based on current AP-42 emission factors for the materials handling and storage operations. In most cases, partial enclosures and wet suppression techniques are used as controls except when handling dry-unconditioned materials when the use of partial enclosures and dust collection systems are employed. Emission estimates were based on various AP-42 (EPA, 1998a) emission factors including the following:

- Chapter 13.2.4 Aggregate Handling and Storage Piles;
- Chapter 13.2.5 Industrial Wind Erosion
- Chapter 11.2 Concrete Batching

Figure SJRPP01 presents an overview of the materials handling operations (Point & Fugitive Emission Units) along with the AQCS or strategy, reduction or control efficiency, short-term and annual emissions of particulate matter (PM<sub>10</sub>), and the monitoring/testing protocol. The emission estimates for the various units are presented within the individual emissions unit sections of the application forms.

### **3.2.2 Summary of Control Technologies**

The comprehensive inventory noted that various control strategies have been implemented to control visible emissions to 10% opacity as required by the PSD permit. Emissions of particulate matter from materials handling and storage operations can be controlled by various techniques including but not limited to the following:

- a. Conditioned Materials - (Bulk materials with normal moisture contents greater than 3.5 percent).
- b. Wet Suppression - (Direct application of water and/or chemicals to the bulk materials for purposes of increasing moisture contents and/or stabilizing small particles)
- c. Water Sprays - (Indirect application of water for purposes of knocking down fugitive dust once it is released from the operation.)
- d. Enclosures - (Total or partial enclosures, or wind breaks/guards to reduce or eliminate particulate emissions or causes of such emissions)
- e. Dust Collection Systems - (Collects and controls particulate emissions from partial or totally enclosed operations.)
- f. Best Operating Practices - (Design features and operating practices to reduce or eliminate the causes of fugitive dust emissions.)

The application of each control strategy has ensured compliance with the 10% opacity limit of the 1982 BACT determination. For the following emissions units/activities, JEA is requesting lower allowable emission limitations for some operations and clarifying the applicable control strategies for others.

#### **3.2.2.1 Transfer Operation - Receiving Hoppers to Conveyor Belts**

For the transfer operations from the receiving hoppers to the ship unloading conveyors, JEA handles conditioned materials and uses partial enclosures. This control strategy provides at least 85 percent control efficiency and complies with the 10% opacity limit of the PSD permit. At one time a dust collection system was used but it became impracticable to operate because of the high humidity and salinity in the water-front area.

#### **3.2.2.2 Transfer Points**

For the transfer points (Transfer Station Nos. 1, 2, 3, 4, 5, 6, & 7) following after the ship unloading operations, controls include handling of conditioned materials, wet suppression (Points 1, 2, & 3), and partial enclosures. The requested emission limit is a 5% opacity limitation on each transfer point.

#### **3.2.2.3 Conveyor Belts**

For the conveyor belts, excluding the ship unloading conveyor (CT-1) and the stacker/reclaimer conveyors (CT-4, C-4 & L-2), controls include handling conditioned materials, conveyor covers, and best operating practices. The requested emission limit is a 5% opacity limitation.

For these conveyor belts (CT-1, CT-4, C-4, & L-2), controls include the handling of conditioned materials, wind screens on each side of the conveyor, and best operating practices. The emission limitation remains a visible emissions limitation of 10% opacity.

#### **3.2.2.4 Storage Piles**

The coal storage pile now includes 38 active acres, versus the 10 active and 26 inactive acres referenced in Table 6, storing coal, petroleum coke, and limestone. The controls include the use of wetting agents to reduce potential emissions by 90 percent and a visible emissions limitation of 10 percent opacity.

For the gypsum and solid waste disposal areas, the 10 percent opacity limitation from the storage areas and the use of conditioned materials with wet suppression as needed remains as the emission limitation.

#### **3.2.2.5 Fuel Transfer House**

For the fuel transfer house, the controls include the handling of conditioned materials, partial enclosure, and water sprays for a control efficiency of 85% or more and the 10% opacity limitation on the tower and lowering well will remain. The dust collection system and fabric filter used in the past is being removed and replaced with a water spray system. The fabric filter was replaced because it was no longer practical to operate given the potential emission rates.

#### **3.2.2.6 Fuel Handling Building**

For the fuel handling building, the controls include the handling of conditioned materials, partial enclosure of the operations, and a dust collection system equipped with a fabric filter with a control efficiency of 99% or more. The requested emission limitation is a 5% opacity limitation on the building, building ventilation exhausts, and the dust collection system exhaust.

#### **3.2.2.8 Boiler Silos**

For the boiler silos, the controls include the partial enclosure of the operations and a dust collection system equipped with a fabric filter with a control efficiency of 99% or more. The requested emission limitation is a 5% opacity limitation on the dust collection system exhaust.

#### **3.2.2.9 Limestone Loadout Facility**

For the limestone loadout facility, the controls include the handling of conditioned materials, partial enclosure of the operations, and a dust collection system equipped with a fabric filter with a control efficiency of 99% or more. The requested emission limitation is a 5% opacity limitation on the building, building ventilation exhausts, and the dust collection system exhaust.

#### **3.2.2.10 Limestone Silos/Preparation Building**

For the limestone silos and preparation facility, the controls include the handling of conditioned materials, partial enclosure of the operations, and a dust collection system equipped with a fabric filter with a control efficiency of 99% or more. The requested emission limitation is a 5% opacity limitation on the building, building ventilation exhausts, and the dust collection system exhaust.

#### **3.2.2.11 Fly Ash Transfer and Storage Operations**

For the fly ash transfer and storage operations, the controls include the total enclosure of the operations, use of a pneumatic transfer system, and a dust collection system equipped with a fabric filter with a control efficiency of 99% or more. The requested emission limitation is a 5% opacity limitation on the dust collection system exhaust.

#### **3.2.2.12 Bottom Ash and Fly Ash Loadout Operations**

For the bottom ash and fly ash loadout operations, the controls include the partial enclosure of the preparation operations and the handling of conditioned materials. The requested emission limitation is a 5% opacity limitation on the loadout stations. Fugitive emissions will be controlled by the partial enclosure of the activities, water sprays, and material conditioning with water to increase moisture content prior to loading into the vehicles.

### **4.0 CONCLUSIONS**

The materials handling operations at SJRPP have been constructed under the authorizations of the initial and revised PSD permit and Site Certification and subsequent Department approvals. The comprehensive and complete emissions inventory for the materials handling operations at SJRPP reveals that none of the emission units or activities emits particulate matter in significant amounts (Title V - Particulate Matter Significant Level 5 tons per year).

The prior Tables 2 and 6 reflect an off-site coal pile (30 Acres) and associated materials handling operations (8 Transfer Points), and the auxiliary boiler that were never constructed which are therefore being deleted from the permit in the new Table 6. In addition, the prior Tables 2 and 6 reflect the operation of two ship unloaders (2 Grab Buckets), while only one ship unloader, capable of using 1 grab bucket at a time (Note: 2 Buckets, 1 operation & 1 spare), was built. This too is being clarified in this application and new Table 6.

The prior Tables 2 and 6 reflect three coal storage piles (1-Active & 2-Inactive), a stacker and a bucket wheel reclaimer, although the existing operations include a single active pile storing coal, petroleum coke, and limestone, and an additional stacker/reclaimer. This is being clarified in the new Table 6.

In addition to the coal/petroleum coke storage pile, outdoor storage and handling of limestone, gypsum (Covered Building & Landfill), and ash (Landfill) is also conducted. The prior Tables 2 and 6 reflect receipt and transfer of limestone by train, and the application package reflects receipt by ship, truck, and on-site transfers by trucks, as well as stacking, storage, and reclaiming. The by-product system for gypsum (vacuum filters, transfer points, conveyors, & storage areas), which was not included in the initial PSD permit application because of the insignificant emissions, is reflected in the updated application package. The prior Tables 2 and 6 reflect the solid waste disposal area, and the updated application package and new Table 6 reflect the loadout of conditioned materials into open trucks.

The prior Tables 2 and 6 reflect average short-term transfer rates, while this application package provides the maximum potential transfer rates. The application package also reflects the maximum potential annual throughput rates for coal and/or petroleum coke and limestone, based on the maximum continuous usage rate of the two steam generating units and worst-case fuels.

This amount conservatively totals approximately 5.13 million tons per year for coal and/or petroleum coke and 600,000 tons per year for limestone.

The technology review for the materials handling system noted that specific operations are subject to the requirements of 40 CFR 60 Subpart Y when handling coal, and that the overland conveyor system is subject to the requirements of 40 CFR 60 Subpart OOO when handling limestone.

The application requests visible emissions limitations on the materials handling operations which are as stringent as or more stringent than the current BACT limits.

Attachment 5 contains a complete air permit application reflecting the materials handling operations. The application package includes several emission units which were previously grouped within the "Facility-Fugitive PM/PM10 emissions" as identified in the Title V Operating Permit application. These units reflect point source emissions (i.e., those sources equipped with a dust collection system).

Based on the evaluations conducted for this update, the materials handling operations at SJRPP reflect the application of BACT and will not cause or contribute to a violation of any ambient air quality standard or PSD Class I or II Increment. Therefore, JEA requests that the PSD permit for SJRPP be updated to reflect the comprehensive and complete identification of the existing materials handling operations and maximum potential throughput rates, and that Tables 2 and 6 be replaced with a new Table 6.

**ATTACHMENT 1**  
**SJRPP PSD PERMIT UPDATE**  
**Revised PSD Permit Tables 2 and 6, 1986 Version**



UNITED STATES ENVIRONMENTAL PROTECTION AGENCY

OCT 28 1986

REGION IV

345 COURTLAND STREET  
ATLANTA, GEORGIA 30365

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CERTIFIED MAIL  
RETURN RECEIPT REQUESTED

Mr. Richard Breitmoser, P. E.  
Division Chief  
Research and Environmental Affairs Division  
Jacksonville Electric Authority  
P. O. Box 53015  
233 W. Duval Street  
Jacksonville, Florida 32201

RE: St. John's River Power Park PSD-FL-010

Dear Mr. Breitmoser:

This letter is in response to your May 12, 1986, request for coal terminal and blending modifications at the above-referenced facility permitted on March 12, 1982, by EPA Region IV. The Florida Department of Regulation (FDER) published a public notice announcing the proposed coal handling modifications on July 28, 1986. No comments were received and the FDER subsequently recommended that the PSD permit be modified.

In addition to the above, we have reviewed recommendations from The Department of Health, Welfare, and Bio-Environmental Services (City of Jacksonville, Florida) dated July 1, 1986, regarding opacity and control of fugitive emissions from shiploading, and subsequent recommendations from your office dated August 27, 1986, regarding emission limits and testing of non-stack emission points. In response to these recommendations and communications with the FDER, your PSD permit (PSD-FL-010) is hereby modified as follows:

1. The second paragraph of Condition of Approval No. 3 is changed from the existing wording regarding compliance testing of particulate emission points to the following:

"Opacity tests shall be performed for emission points three (3) through nineteen (19) of revised Table 6 for compliance purposes. If the opacity limits are not met for those sources that exhaust through a stack, permit compliance shall be determined on the basis of mass emission rate tests."

2. Table 2 of the final determination is replaced by revised Table 2 (enclosed).
3. Table 6 of the final determination is replaced by revised Table 6 (enclosed).
4. All reference to Table 2 and Table 6 in Conditions of Approval numbers 2, 3, 4, and 5, as contained in the March 12, 1982 PSD permit, shall be construed to pertain to the enclosed revised Tables 2 and 6.

DER

NOV 17 1986

BAOM

Please be advised that the modification to your PSD permit herein described shall become a binding part of permit PSD-FL-010. This permit modification shall become effective upon receipt of this letter, unless you notify us of your unacceptance of the conditions contained herein within ten (10) days after receipt of this letter.

If you have any questions regarding this permit modification, please contact Mr. Wayne J. Aronson, Chief, Program Support Section, at (404) 347-4901.

Sincerely yours,

/s/ Lee A. DeHihns, III  
Deputy Regional Administrator

Jack E. Ravan  
Regional Administrator

Attachments: 2

cc: Mr. Clair H. Fancy  
Deputy Bureau Chief  
Florida Department of Environmental Regulation



Table 2. Fugitive Emissions and Control Summary (Revised: From PSD Permit)

| Process                                                            | Type                 | Amount              | Factor                                                  | Control              | Technique                       | Emission (Tons/yr) |
|--------------------------------------------------------------------|----------------------|---------------------|---------------------------------------------------------|----------------------|---------------------------------|--------------------|
| 1 Ship Unloading*                                                  | 2 Grab Buckets       | 2,200 Tons/hr       | 0.0016 lb/Ton*                                          | 70.0%                | Suppression, Enclosure          | 0.13               |
| 2 Feeders to Conveyor A*                                           | 2 Points             | 2,200 Tons/hr       | 0.00039 lb/Ton                                          | 85.0%                | Suppression, Enclosure          | 0.02               |
| 3 Conveyor Transfers, 1 and 2*                                     | 2 Points             | 2,200 Tons/hr       | 0.00087 lb/Ton**                                        | 85.0%                | Suppression Enclosure           | 0.07               |
| 4 Conveyor Transfers 3, 4, 5 and D to D by-pass*                   | 4 Points             | 2,200 Tons/hr       | 0.00118 lb/Ton**                                        | 75.0%                | Enclosure, Conditioned Material | 0.33               |
| 5 Conveyor Transfers 6 and 7*                                      | 2 Points             | 2,000 Tons/hr       | 0.00106 lb/Ton**                                        | 75.0%                | Enclosure, Conditioned Material | 0.13               |
| 6 Traveling Stacker*                                               | 3 Points:<br>1 Point | 2,200 Tons/hr       | 0.00031 lb/Ton                                          | 75.0%                | Enclosure, Conditioned Material | 0.02               |
|                                                                    | 1 Point              | 2,200 Tons/hr       | 0.00039 lb/Ton                                          | 75.0%                | Enclosure, Conditioned Material | 0.03               |
|                                                                    | 1 Point              | 2,200 Tons/hr       | 0.00017 lb/Ton                                          | 0.0%                 |                                 | 0.05               |
| 7 Bucket Wheel Reclaimer*                                          | 2 Points             | 2,000 Tons/hr       | 0.00063 lb/Ton**                                        | 75.0%                | Enclosure, Conditioned Material | 0.08               |
| 8 Ship-Unloading Facility Coal Surge Pile                          | Active               | 30 Acres            | 13 lb/Acre/day <sup>a</sup>                             | (90%) <sup>a</sup>   | Wetting Agent                   | 0.20               |
| 9 Coal Handling Transfer Points Ship Unloading Facility Coal Pile* | 8 Points             | 2,200 Tons/Hr.      | 0.00041 lbs/Ton**                                       | 75.0%                | Enclosure, Conditioned Material | 0.23               |
| 10 Rail Car Unloading                                              | Rotary Dumper        | 10,000 Tons/Day     | 0.4 lb/Ton <sup>a</sup>                                 | (97%) <sup>b</sup>   | Wet Suppression                 | 0.63               |
| 11 Coal Handling Transfer Points                                   | 2 Points             | 10,000 Tons/Day     | 0.2 lb/Ton <sup>c</sup>                                 | (99.9%) <sup>b</sup> | Dry Collection                  | 0.02               |
| 12 Coal Handling Transfer Points                                   | 2 Points             | 3,300 Tons/Day      | 0.2 lb/Ton <sup>c</sup>                                 | (99.9%) <sup>b</sup> | Dry Collection                  | 0.01               |
| 13 Coal Handling Transfer Points                                   | 6 Points             | 3,300 Tons/Day      | 0.2 lb/Ton <sup>c</sup>                                 | (97%) <sup>b</sup>   | Wet Suppression                 | 0.62               |
| 14 Coal Handling Transfer Points                                   | 7 Points             | 5,000 Tons/Day      | 0.2 lb/Ton <sup>c</sup>                                 | (99.9%) <sup>b</sup> | Dry Collection                  | 0.04               |
| 15 Coal Storage At Plant*                                          | Active               | 10 Acres            | 13 lb/Acre/day <sup>a</sup>                             | (90%) <sup>a</sup>   | Wetting Agent                   | 0.07               |
| 16 Coal Storage At Plant*                                          | 2 Inactive Piles     | 13 Acres            | 3.5 lb/Acre/day <sup>a</sup>                            | (99%) <sup>a</sup>   | Wetting Agent                   | 0.00               |
| 17 Limestone Unloading                                             | Rail Dumper          | 750 Tons/Day        | 0.4 lb/ton <sup>a</sup>                                 | (97%) <sup>b</sup>   | Wet Suppression                 | 0.05               |
| 18 Limestone Transfer                                              | 1 Point              | 750 Tons/Day        | 0.2 lb/Ton <sup>a</sup>                                 | (99.9%) <sup>b</sup> | Dry Collection                  | 0.00               |
| 19 Cooling Towers                                                  | Drift                | 2 x 243,500 gal/min | 51,450 ppm solids (maximum) (40% < 50 microns diameter) | 99.999%              | Drift Elimination               | 12.66              |
| 20 Solid Waste Disposal Area                                       | Active               | 10 Acres            | 13 lb/Acre/day <sup>a</sup>                             | (90%) <sup>a</sup>   | Wetting Agent                   | 0.07               |

\* Revised process or emissions, May 1986.

- Weighted average based on 1,500 and 700 STPH ship unloaders.

\*\* Average of emission factors for individual sources.

a. Pedco, 1977.

b. Stoughton, 1980.

c. EPA, 1979.

Table 6. Allowable Emission Limits (Revised; From PSD Permit) (lb/hour: lb/MMBtu)

| Emission Unit                                                                         | SO <sub>2</sub>                                  | NO <sub>x</sub> | PM<br>(Revised<br>Original) | Opacity<br>(Percent) |
|---------------------------------------------------------------------------------------|--------------------------------------------------|-----------------|-----------------------------|----------------------|
| 1. Steam Generating Boiler No. 1<br>(6.144 MMBtu/hr maximum heat input)               | 4.669;<br>0.76<br>(30-day<br>rolling<br>average) | 3.686;<br>0.6   | 184;<br>0.03                | 20                   |
| 2. Steam Generating Boiler No. 2<br>(6.144 MMBtu/hr maximum heat input)               | 4.669;<br>0.76<br>(30-day<br>rolling<br>average) | 3.686;<br>0.6   | 184;<br>0.03                | 20                   |
| 3. Auxiliary boilers (254 MMBtu/hr<br>maximum heat input total)                       | 203;<br>0.8                                      |                 | 25.0;<br>0.1                | 20                   |
| 4. Ship Unloading (2 Grab Buckets)*                                                   |                                                  |                 | 1.0                         | 10                   |
| 5. Feeders to Conveyor A<br>(2 Wet Suppression points)*                               |                                                  |                 | 0.13                        | 10                   |
| 6. Conveyor Transfers 1 & 2<br>(2 points)*                                            |                                                  |                 | 0.57                        | 10                   |
| 7. Conveyor Transfer 3, 4, 5 &<br>D to D by-pass (4 points)*                          |                                                  |                 | 2.6                         | 10                   |
| 8. Conveyor Transfers 6 & 7 (2 points)*                                               |                                                  |                 | 1.0                         | 10                   |
| 9. Traveling Stacker (3 points)*                                                      |                                                  |                 | 0.8                         | 10                   |
| 10. Bucket Wheel Reclaimer (2 points)*                                                |                                                  |                 | 0.6                         | 10                   |
| 11. Ship unloading facility coal<br>storage pile                                      |                                                  |                 | 1.6                         | 10                   |
| 12. Coal handling transfer points<br>ship unloading facility coal<br>pile (8 points)* |                                                  |                 | 1.8                         | 10                   |
| 13. Rail car unloading (Rotary Dumper)                                                |                                                  |                 | 5                           | 10                   |
| 14. Coal handling transfer points<br>(6 wet suppression points)                       |                                                  |                 | 5 (each)                    | 10                   |
| 15. Coal handling transfer points<br>(11 dry collection)                              |                                                  |                 | 0.1 (each)                  | 10                   |
| 16. Coal storage at plant*<br>(10 acres active)                                       |                                                  |                 | 0.5                         | 10                   |
| 17. Coal storage at plant*<br>(2 to 13-acre inactive piles)                           |                                                  |                 | 0.02                        | 10                   |
| 18. Limestone unloading<br>(rail dumper)                                              |                                                  |                 | 0.1                         | 10                   |
| 19. Limestone transfer points                                                         |                                                  |                 | 0.4 (each)                  | 10                   |
| 20. Cooling towers                                                                    |                                                  |                 | 67 (each<br>tower)          | N/A                  |

\* Revised emission unit, May 1986.

**ATTACHMENT 2**

**SJRPP PSD PERMIT UPDATE**

**Materials Handling and Storage Operations - Allowable Emissions**

**ATTACHMENT 2  
ST JOHNS RIVER POWER PARK  
PSD PERMIT UPDATE**

**MATERIALS HANDLING AND STORAGE OPERATIONS - ALLOWABLE EMISSIONS**

| ID No. | Emission Unit - Table 6                                         | Allowable Emissions (lb/hr) | Emission Unit(s) - Updated Inventory                                                                                                                     | Potential Emissions (lb/hr) | Difference (lb/hr) |
|--------|-----------------------------------------------------------------|-----------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------|--------------------|
| 4      | Ship Unloading (2 Grab Buckets)                                 | 1                           | Ship Hold                                                                                                                                                | 0.544                       | -0.456             |
| 5      | Feeders to Conveyor A (2 Wet Suppression Points)                | 0.13                        | Transfer Points to CT1, Unloader Hopper, and Spillage Collector Transfers                                                                                | 1.271                       | 1.141              |
| 6      | Conveyor Transfers 1 & 2 (2 points)                             | 0.57                        | Transfer Stations 1 & 2                                                                                                                                  | 0.089                       | -0.481             |
| 7      | Conveyor Transfers 3, 4, 5, & D to D by-pass (4 points)         | 2.6                         | Transfer Stations 3, 4, & 5                                                                                                                              | 0.135                       | -2.465             |
| 8      | Conveyor Transfers 6 & 7 (2 points)                             | 1                           | Transfer Stations 6 & 7                                                                                                                                  | 0.088                       | -0.912             |
| 9      | Traveling Stacker (3 points)                                    | 0.8                         | Stacker                                                                                                                                                  | 1.151                       | 0.351              |
| 10     | Bucket Wheel Reclaimer (2 points)                               | 0.6                         | Reclaimer                                                                                                                                                | 0.915                       | 0.315              |
| 11     | Ship Unloading Facility Coal Storage Pile                       | 1.6                         | Never Constructed                                                                                                                                        | 0                           | -1.6               |
| 12     | Coal Handling Transfer Points Ship Unloading Facility Coal Pile | 1.8                         | Never Constructed                                                                                                                                        | 0                           | -1.8               |
| 13     | Rail Car Unloading (Rotary Dumper)                              | 5                           | Railcar Rotary Dumper & Dust Collector DC-1                                                                                                              | 0.320                       | -4.680469          |
| 14     | Coal Handling Transfer Points (6 Wet Suppression Points)        | 30                          | Fuel Transfer Building, Conveyor C-3 Ventilation, Petroleum Coke Reclaimer System, Emergency Reclaim Hoppers, & Stacker/Reclaimer.                       | 4.405                       | -25.59536          |
| 15     | Coal Handling Transfer Points (11 dry collection)               | 1.1                         | Dust Collectors DC-3, DC-4, & DC-5                                                                                                                       | 0.272                       | -0.827659          |
| 16     | Coal Storage at Plant (10 Acres Active)                         | 0.5                         | Coal Pile, Petroleum Coke, & New Limestone Storage Pile                                                                                                  | 1.093                       | 0.593              |
| 17     | Coal Storage at Plant (2, 13 acres inactive piles)              | 0.02                        | All Active                                                                                                                                               | 0                           | -0.02              |
| 18     | Limestone Unloading (rail dumper)                               | 0.1                         | Limestone Railcar Unloader, & Dust Collectors LDC-1                                                                                                      | 0.035                       | -0.065             |
| 19     | Limestone Transfer Points (0.4lb/point)                         | 0.4                         | Limestone Loadout & Dust Collectors LDC-2, 3DC-01, 1DC-01, & 2DC-01, New Truck Loadout & Transfer, Limestone Storage Pile #1, & Limestone Reclaim Hopper | 0.778                       | 0.378              |
|        |                                                                 |                             | Additional Emission Units/Activities Listed on Figure SJRPP01                                                                                            | 1.9245                      | 1.9245             |
| Totals | 1986 PSD Permit                                                 | 47.22                       | Proposed 1999 Permit Revision                                                                                                                            | 13.019012                   | -34.20099          |

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EXCEL 7.0 Worksheet

St. John's River Power Park - PSD Permit Update  
Materials Handling and Storage Operations  
Point Source Calculations

| Equipment/Activity                                  | EU ID # | Excel 7.0 Cal. Sheet | Control Efficiency (%) | Opacity (%) | Emission Estimates |                  |        |                  |                  |                  |               |                  |
|-----------------------------------------------------|---------|----------------------|------------------------|-------------|--------------------|------------------|--------|------------------|------------------|------------------|---------------|------------------|
|                                                     |         |                      |                        |             | lb/hr              |                  | TPY    |                  | gps - Short Term |                  | gps-Long Term |                  |
|                                                     |         |                      |                        |             | PM                 | PM <sub>10</sub> | PM     | PM <sub>10</sub> | PM               | PM <sub>10</sub> | PM            | PM <sub>10</sub> |
| Rotary Railcar Dumper, Fuel Transfer Points (DC-1)  | 043     | MP #55               | 99.5%                  | 5.0%        | 0.1744             | 0.0825           | 0.1117 | 0.0529           | 0.0220           | 0.0104           | 0.00322       | 0.00152          |
| Fuel Handling Building (DC-3)                       | 046     | MP #21               | 99.5%                  | 5.0%        | 0.2372             | 0.1122           | 0.1520 | 0.0719           | 0.0299           | 0.0141           | 0.00438       | 0.00207          |
| Unit #1 Fuel Storage Bins (DC-4)                    | 047     | MP #31               | 99.5%                  | 5.0%        | 0.0176             | 0.0083           | 0.0225 | 0.0106           | 0.0022           | 0.0010           | 0.00065       | 0.00031          |
| Unit #2 Fuel Storage Bins (DC-5)                    | 047     | MP #32               | 99.5%                  | 5.0%        | 0.0176             | 0.0083           | 0.0225 | 0.0106           | 0.0022           | 0.0010           | 0.00065       | 0.00031          |
| Railcar Unloader, Limestone Transfer Points (LDC-1) | 048     | MP #63               | 99.5%                  | 5.0%        | 0.0243             | 0.0115           | 0.0036 | 0.0017           | 0.0031           | 0.0015           | 0.00011       | 0.00005          |
| Limestone Loadout Facility (LDC-2)                  | 049     | MP #68               | 99.5%                  | 5.0%        | 0.0122             | 0.0058           | 0.0009 | 0.0004           | 0.00153          | 0.00073          | 0.000026      | 0.000012         |
| Limestone Reclaim Hopper, Transfer Points (3DC-01)  | 050     | MP #72               | 99.5%                  | 5.0%        | 0.0007             | 0.0003           | 0.0007 | 0.0003           | 0.00008          | 0.00004          | 0.000019      | 0.000009         |
| Limestone Silo (1DC-01)                             | 051     | MP #73               | 99.5%                  | 5.0%        | 0.0007             | 0.0003           | 0.0007 | 0.0003           | 0.00008          | 0.00004          | 0.000019      | 0.000009         |
| Limestone Silo (2DC-01)                             | 051     | MP #74               | 99.5%                  | 5.0%        | 0.0007             | 0.0003           | 0.0007 | 0.0003           | 0.00008          | 0.00004          | 0.000019      | 0.000009         |
| Quick Lime Silo                                     | 052     | MP #97               | 99.5%                  | 5.0%        | 0.0225             | 0.0225           | 0.0986 | 0.0986           | 0.0028           | 0.0028           | 0.00284       | 0.00284          |
| Non-Saleable Ash Silo U#1-A                         | 053     | MP #75               | 99.5%                  | 5.0%        | 0.0169             | 0.0169           | 0.0739 | 0.0739           | 0.0021           | 0.0021           | 0.00213       | 0.00213          |
| Non-Saleable Ash Silo U#2-A                         | 053     | MP #80               | 99.5%                  | 5.0%        | 0.0169             | 0.0169           | 0.0739 | 0.0739           | 0.0021           | 0.0021           | 0.00213       | 0.00213          |
| Saleable Ash Silo 1A                                | 054     | MP #76               | 99.5%                  | 5.0%        | 0.0338             | 0.0338           | 0.1478 | 0.1478           | 0.0043           | 0.0043           | 0.00426       | 0.00426          |
| Saleable Ash Silo 1B                                | 054     | MP #77               | 99.5%                  | 5.0%        | 0.0338             | 0.0338           | 0.1478 | 0.1478           | 0.0043           | 0.0043           | 0.00426       | 0.00426          |
| Saleable Ash Silo 2A                                | 054     | MP #81               | 99.5%                  | 5.0%        | 0.0338             | 0.0338           | 0.1478 | 0.1478           | 0.0043           | 0.0043           | 0.00426       | 0.00426          |
| Saleable Ash Silo 2B                                | 054     | MP #82               | 99.5%                  | 5.0%        | 0.0338             | 0.0338           | 0.1478 | 0.1478           | 0.0043           | 0.0043           | 0.00426       | 0.00426          |
| Railcar Rotary Dumper - Building Emissions          | 023a    | MP #54               | 97.0%                  | 10.0%       | 0.1451             | 0.0686           | 0.0930 | 0.0440           | 0.0183           | 0.0087           | 0.00268       | 0.00127          |
| Conveyor C-3 Tunnel Ventilation - 6,400 cfm         | 023b    | MP # 48              | 98.0%                  | 5.0%        | 0.0324             | 0.0153           | 0.0416 | 0.0197           | 0.0041           | 0.0019           | 0.00120       | 0.00057          |
| Conveyor C-3 Tunnel Ventilation - 6,400 cfm         | 023b    | MP # 49              | 98.0%                  | 5.0%        | 0.0324             | 0.0153           | 0.0416 | 0.0197           | 0.0041           | 0.0019           | 0.00120       | 0.00057          |
| Conveyor C-3 Tunnel Ventilation - 21,600 cfm        | 023b    | MP #50               | 98.0%                  | 5.0%        | 0.1095             | 0.0518           | 0.1403 | 0.0664           | 0.0138           | 0.0065           | 0.00404       | 0.00191          |

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EXCEL 7.0 Worksheet

St. John's River Power Park - PSD Permit Update  
Materials Handling and Storage Operations  
Fugitive Dust Calculations

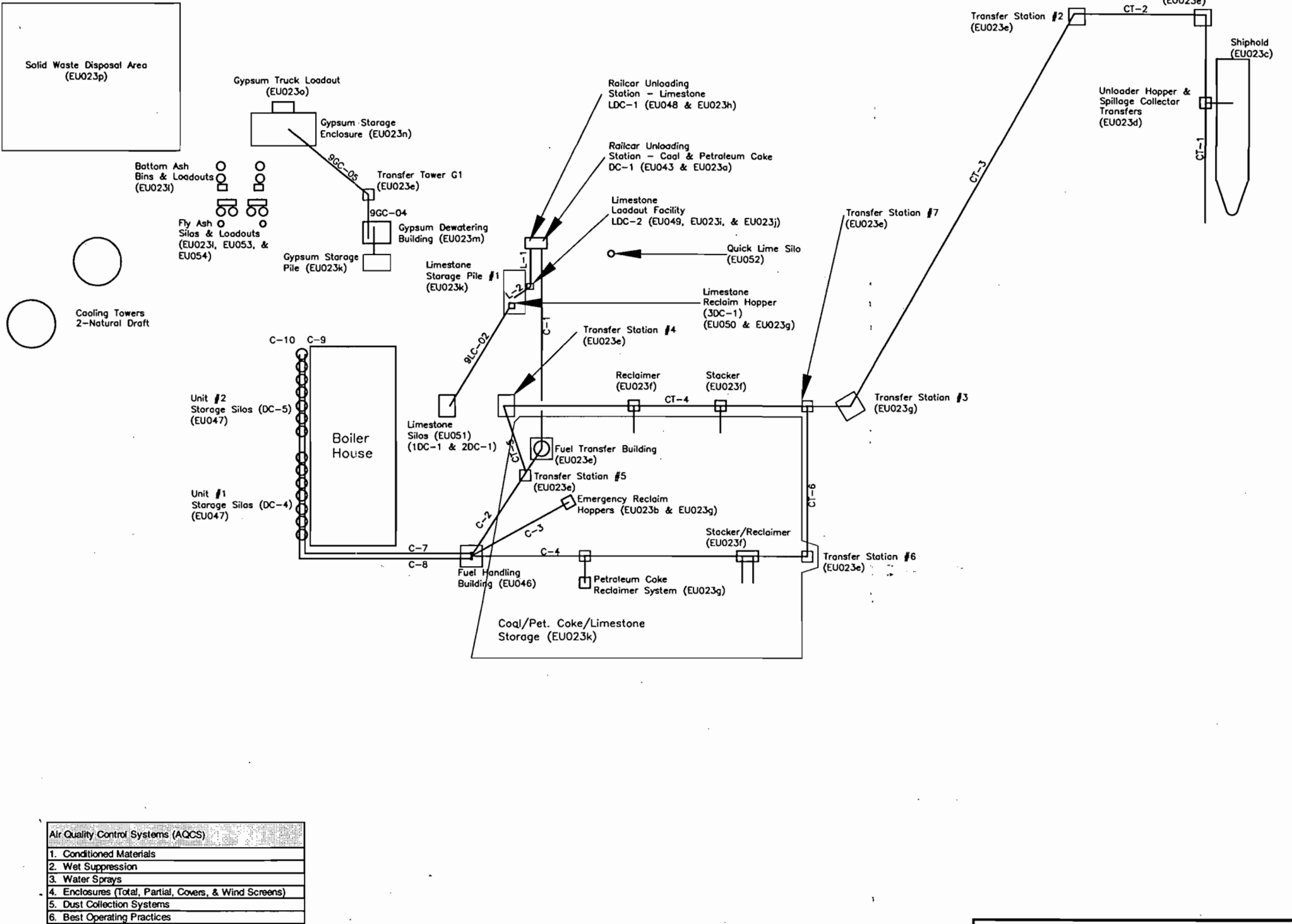
| Equipment/Activity                                        | EU ID # | Excel 7.0 Cal. Sheet | Control Efficiency (%) | Opacity (%) | Emission Estimates |                  |       |                  |                  |                  |               |                  |
|-----------------------------------------------------------|---------|----------------------|------------------------|-------------|--------------------|------------------|-------|------------------|------------------|------------------|---------------|------------------|
|                                                           |         |                      |                        |             | lb/hr              |                  | TPY   |                  | gps - Short Term |                  | gps-Long Term |                  |
|                                                           |         |                      |                        |             | PM                 | PM <sub>10</sub> | PM    | PM <sub>10</sub> | PM               | PM <sub>10</sub> | PM            | PM <sub>10</sub> |
| Shiphold                                                  | 023c    | MP #1                | 70.0%                  | 10.0%       | 0.544              | 0.257            | 1.005 | 0.476            | 0.069            | 0.032            | 0.029         | 0.014            |
| Unloader Hopper and Spillage Collector Transfers          | 023d    | MP #2                | 85.0%                  | 10.0%       | 0.275              | 0.130            | 0.508 | 0.240            | 0.035            | 0.016            | 0.015         | 0.007            |
| Ship Unloader Hopper, Transfer to CT-1, Spillage Conveyor | 023d    | MP #3                | 85.0%                  | 10.0%       | 0.996              | 0.471            | 1.840 | 0.870            | 0.126            | 0.059            | 0.053         | 0.025            |
| Transfer Station No. 1                                    | 023e    | MP #5                | 98.0%                  | 5.0%        | 0.044              | 0.021            | 0.082 | 0.039            | 0.006            | 0.003            | 0.002         | 0.001            |
| Transfer Station No. 2                                    | 023e    | MP # 8               | 98.0%                  | 5.0%        | 0.044              | 0.021            | 0.082 | 0.039            | 0.006            | 0.003            | 0.002         | 0.001            |
| Transfer Station No. 3                                    | 023e    | MP #12               | 98.0%                  | 5.0%        | 0.046              | 0.022            | 0.086 | 0.041            | 0.006            | 0.003            | 0.002         | 0.001            |
| Transfer Station No. 4                                    | 023e    | MP #16               | 98.0%                  | 5.0%        | 0.044              | 0.021            | 0.076 | 0.036            | 0.006            | 0.003            | 0.002         | 0.001            |
| Transfer Station No. 5                                    | 023e    | MP # 16a             | 98.0%                  | 5.0%        | 0.044              | 0.021            | 0.076 | 0.036            | 0.006            | 0.003            | 0.002         | 0.001            |
| Transfer Station No. 6                                    | 023e    | MP #37               | 98.0%                  | 5.0%        | 0.044              | 0.021            | 0.056 | 0.027            | 0.006            | 0.003            | 0.002         | 0.001            |
| Transfer Station No. 7                                    | 023e    | MP #39               | 98.0%                  | 5.0%        | 0.044              | 0.021            | 0.056 | 0.027            | 0.006            | 0.003            | 0.002         | 0.001            |
| Fuel Transfer Building                                    | 023e    | MP #61               | 85.0%                  | 5.0%        | 0.654              | 0.309            | 0.419 | 0.198            | 0.082            | 0.039            | 0.012         | 0.006            |
| Stacker/Reclaimer (Stacker Mode)                          | 023f    | MP #40               | 82.7%                  | 10.0%       | 2.286              | 1.081            | 1.465 | 0.693            | 0.288            | 0.136            | 0.042         | 0.020            |
| Stacker                                                   | 023f    | MP #44               | 82.7%                  | 10.0%       | 1.151              | 0.544            | 2.126 | 1.005            | 0.145            | 0.069            | 0.061         | 0.029            |
| Reclaimer                                                 | 023f    | MP #45               | 89.7%                  | 10.0%       | 0.915              | 0.433            | 1.172 | 0.554            | 0.115            | 0.055            | 0.034         | 0.016            |
| Petroleum Coke Reclaimer System                           | 023g    | MP #46               | 60.0%                  | 10.0%       | 0.685              | 0.324            | 3.002 | 1.420            | 0.086            | 0.041            | 0.086         | 0.041            |
| Emergency Reclaim Hoppers - Loadout                       | 023g    | MP #47               | 75.0%                  | 10.0%       | 0.605              | 0.286            | 0.775 | 0.367            | 0.076            | 0.036            | 0.022         | 0.011            |
| Limestone Railcar Dumper                                  | 023h    | MP #62               | 97.0%                  | 10.0%       | 0.010              | 0.005            | 0.008 | 0.004            | 0.001            | 0.001            | 0.000         | 0.000            |
| Limestone Loadout                                         | 023i    | MP #69               | 97.0%                  | 10.0%       | 0.010              | 0.005            | 0.008 | 0.004            | 0.001            | 0.001            | 0.000         | 0.000            |
| Limestone Truck Loadout & Transfer                        | 023j    | MP #69a              | 75.0%                  | 10.0%       | 0.209              | 0.099            | 0.188 | 0.089            | 0.026            | 0.012            | 0.005         | 0.003            |
| Limestone Storage Pile #1 - Existing                      | 023k    | MP #70a              | 90.0%                  | 10.0%       | 0.255              | 0.255            | 0.018 | 0.018            | 0.032            | 0.032            | 0.001         | 0.001            |
| Limestone Storage Pile #2 - Fuel Yard                     | 023k    | MP #70b              | 90.0%                  | 10.0%       | 0.118              | 0.118            | 0.008 | 0.008            | 0.015            | 0.015            | 0.000         | 0.000            |
| Coal Pile                                                 | 023k    | MP #70c              | 90.0%                  | 10.0%       | 0.264              | 0.264            | 0.006 | 0.006            | 0.033            | 0.033            | 0.000         | 0.000            |
| Petroleum Coke Pile                                       | 023k    | MP #70d              | 90.0%                  | 10.0%       | 0.711              | 0.711            | 0.042 | 0.042            | 0.090            | 0.090            | 0.001         | 0.001            |
| Limestone Reclaim Hopper                                  | 023g    | MP #71               | 42.5%                  | 10.0%       | 0.289              | 0.137            | 0.289 | 0.137            | 0.036            | 0.017            | 0.008         | 0.004            |
| Fly Ash loadouts 1A                                       | 023l    | MP #78               | 97.0%                  | 10.0%       | 0.060              | 0.028            | 0.263 | 0.125            | 0.008            | 0.004            | 0.008         | 0.004            |
| Fly Ash loadouts 1B                                       | 023l    | MP #79               | 97.0%                  | 10.0%       | 0.060              | 0.028            | 0.263 | 0.125            | 0.008            | 0.004            | 0.008         | 0.004            |
| Fly Ash loadouts 2A                                       | 023l    | MP #83               | 97.0%                  | 10.0%       | 0.060              | 0.028            | 0.263 | 0.125            | 0.008            | 0.004            | 0.008         | 0.004            |
| Fly Ash loadouts 2B                                       | 023l    | MP #84               | 97.0%                  | 10.0%       | 0.060              | 0.028            | 0.263 | 0.125            | 0.008            | 0.004            | 0.008         | 0.004            |
| Bottom Ash Loadouts 1A                                    | 023l    | MP #85               | 0.0%                   | 10.0%       | 0.089              | 0.042            | 0.389 | 0.184            | 0.011            | 0.005            | 0.011         | 0.005            |
| Bottom Ash Loadouts 1B                                    | 023l    | MP #86               | 0.0%                   | 10.0%       | 0.089              | 0.042            | 0.389 | 0.184            | 0.011            | 0.005            | 0.011         | 0.005            |
| Bottom Ash Loadouts 2A                                    | 023l    | MP #87               | 0.0%                   | 10.0%       | 0.089              | 0.042            | 0.389 | 0.184            | 0.011            | 0.005            | 0.011         | 0.005            |
| Bottom Ash Loadouts 2B                                    | 023l    | MP #88               | 0.0%                   | 10.0%       | 0.089              | 0.042            | 0.389 | 0.184            | 0.011            | 0.005            | 0.011         | 0.005            |
| Gypsum Dewatering Building                                | 023m    | MP #89               | 0.0%                   | 5.0%        | 0.042              | 0.020            | 0.046 | 0.022            | 0.005            | 0.003            | 0.001         | 0.001            |
| Gypsum Storage Pile (Non-Commercial)                      | 023k    | MP #90               | 85.0%                  | 5.0%        | 0.074              | 0.074            | 0.004 | 0.004            | 0.009            | 0.009            | 0.000         | 0.000            |
| Transfer Point 9GC-04 to 9GC-05                           | 023e    | MP #92               | 0.0%                   | 5.0%        | 0.007              | 0.003            | 0.032 | 0.015            | 0.001            | 0.0004           | 0.0009        | 0.0004           |
| Gypsum Storage Enclosure                                  | 023n    | MP #94               | 0.0%                   | 5.0%        | 0.008              | 0.004            | 0.033 | 0.016            | 0.001            | 0.000            | 0.001         | 0.000            |
| Gypsum Truck Loadout                                      | 023o    | MP #95               | 0.0%                   | 5.0%        | 0.275              | 0.130            | 0.578 | 0.273            | 0.035            | 0.016            | 0.017         | 0.008            |
| Solid Waste Disposal Area                                 | 023k    | MP #96               | 90.0%                  | 10.0%       | 0.307              | 0.307            | 0.016 | 0.016            | 0.039            | 0.039            | 0.0005        | 0.0005           |
| Unpaved Road, By-Product Transport                        | 023p    | MP #98               | 75.00%                 | 10.00%      | 0.577              | 0.151            | 2.529 | 0.663            | 0.073            | 0.019            | 0.073         | 0.019            |

**ATTACHMENT 3**  
**SJRPP PSD PERMIT UPDATE**  
**Figure SJRPP01**

Figure SJRPP01

SJRPP  
Materials Handling & Storage Operations  
Layout Schematic - Not To Scale

| Fugitive Dust Sources                                     | EU ID# | AQCS         | Control Efficiency | PM10 (lb/hr) | PM10 (TPY) | Opacity (%) |
|-----------------------------------------------------------|--------|--------------|--------------------|--------------|------------|-------------|
| Shiphold                                                  | 023c   | 1, 4, & 6    | 70.00%             | 0.257        | 0.476      | 10%         |
| Unloader Hopper and Spillage Collector Transfers          | 023d   | 1, 3, 4, & 6 | 85.00%             | 0.130        | 0.240      | 10%         |
| Ship Unloader Hopper, Transfer to CT-1, Spillage Conveyor | 023d   | 1, 3, 4, & 6 | 85.00%             | 0.471        | 0.870      | 10%         |
| Transfer Station No. 1                                    | 023e   | 1, 2, & 4    | 98.00%             | 0.021        | 0.039      | 5%          |
| Transfer Station No. 2                                    | 023e   | 1, 2, & 4    | 98.00%             | 0.021        | 0.039      | 5%          |
| Transfer Station No. 3                                    | 023e   | 1, 2, & 4    | 98.00%             | 0.022        | 0.041      | 5%          |
| Transfer Station No. 4                                    | 023e   | 1 & 4        | 98.00%             | 0.021        | 0.036      | 5%          |
| Transfer Station No. 5                                    | 023e   | 1 & 4        | 98.00%             | 0.021        | 0.036      | 5%          |
| Transfer Station No. 6                                    | 023e   | 1 & 4        | 98.00%             | 0.021        | 0.027      | 5%          |
| Transfer Station No. 7                                    | 023e   | 1 & 4        | 98.00%             | 0.021        | 0.027      | 5%          |
| Fuel Transfer Building                                    | 023e   | 1, 3 & 4     | 85.00%             | 0.309        | 0.198      | 10%         |
| Stacker/Reclaimer (Stacker Mode)                          | 023f   | 1 & 3        | 82.67%             | 1.081        | 0.693      | 10%         |
| Stacker                                                   | 023f   | 1 & 3        | 82.67%             | 0.544        | 1.005      | 10%         |
| Reclaimer                                                 | 023f   | 1 & 3        | 89.67%             | 0.433        | 0.554      | 10%         |
| Petroleum Coke Reclaimer System                           | 023g   | 1            | 60.00%             | 0.324        | 1.420      | 10%         |
| Emergency Reclaim Hoppers - Loadout                       | 023g   | 1            | 75.00%             | 0.286        | 0.367      | 10%         |
| Limestone Railcar Dumper                                  | 023h   | 1, 2, 3, & 4 | 97.00%             | 0.005        | 0.004      | 10%         |
| Limestone Loadout                                         | 023i   | 1 & 3        | 97.00%             | 0.005        | 0.004      | 10%         |
| Limestone Truck Loadout & Transfer                        | 023j   | 1            | 75.00%             | 0.099        | 0.089      | 10%         |
| Limestone Storage Pile #1 - Existing                      | 023k   | 1 & 3        | 90.00%             | 0.255        | 0.018      | 10%         |
| Limestone Storage Pile #2 - Fuel Yard                     | 023k   | 1, 2 & 3     | 90.00%             | 0.118        | 0.008      | 10%         |
| Coal Pile                                                 | 023k   | 1, 2 & 3     | 90.00%             | 0.264        | 0.006      | 10%         |
| Petroleum Coke Pile                                       | 023k   | 1, 2 & 3     | 90.00%             | 0.711        | 0.042      | 10%         |
| Limestone Reclaim Hopper                                  | 023g   | 1            | 42.50%             | 0.137        | 0.137      | 10%         |
| Fly Ash loadouts 1A                                       | 023i   | 1 & 3        | 97.00%             | 0.028        | 0.125      | 10%         |
| Fly Ash loadouts 1B                                       | 023i   | 1 & 3        | 97.00%             | 0.028        | 0.125      | 10%         |
| Fly Ash loadouts 2A                                       | 023i   | 1 & 3        | 97.00%             | 0.028        | 0.125      | 10%         |
| Fly Ash loadouts 2B                                       | 023i   | 1 & 3        | 97.00%             | 0.028        | 0.125      | 10%         |
| Bottom Ash Loadouts 1A                                    | 023i   | 1            | 0.00%              | 0.042        | 0.184      | 10%         |
| Bottom Ash Loadouts 1B                                    | 023i   | 1            | 0.00%              | 0.042        | 0.184      | 10%         |
| Bottom Ash Loadouts 2A                                    | 023i   | 1            | 0.00%              | 0.042        | 0.184      | 10%         |
| Bottom Ash Loadouts 2B                                    | 023i   | 1            | 0.00%              | 0.042        | 0.184      | 10%         |
| Gypsum Dewatering Building                                | 023m   | 1            | 0.00%              | 0.020        | 0.022      | 5%          |
| Gypsum Storage Pile (Non-Commercial)                      | 023k   | 1            | 85.00%             | 0.074        | 0.004      | 5%          |
| Transfer Point 9GC-04 to 9GC-05                           | 023e   | 1            | 0.00%              | 0.003        | 0.015      | 5%          |
| Gypsum Storage Enclosure                                  | 023n   | 1            | 0.00%              | 0.004        | 0.016      | 5%          |
| Gypsum Truck Loadout                                      | 023o   | 1            | 0.00%              | 0.130        | 0.273      | 5%          |
| Solid Waste Disposal Area                                 | 023p   | 1 & 2        | 90.00%             | 0.307        | 0.016      | 10%         |
| Unpaved Road, By-Product Transport                        | 023p   | 1 & 2        | 75.00%             | 0.151        | 0.663      | 10%         |
| Point Sources                                             | EU ID# | AQCS         | Control Efficiency | PM10 (lb/hr) | PM10 (TPY) | Opacity (%) |
| Rotary Railcar Dumper, Fuel Transfer Points (DC-1)        | 043    | 1, 4, & 5    | 99.50%             | 0.0825       | 0.0529     | 5%          |
| Fuel Handling Building (DC-3)                             | 046    | 1, 4, & 5    | 99.50%             | 0.1122       | 0.0719     | 5%          |
| Unit #1 Fuel Storage Bins (DC-4)                          | 047    | 1, 4, & 5    | 99.50%             | 0.0083       | 0.0106     | 5%          |
| Unit #2 Fuel Storage Bins (DC-5)                          | 047    | 1, 4, & 5    | 99.50%             | 0.0083       | 0.0106     | 5%          |
| Railcar Unloader, Limestone Transfer Points (LDC-1)       | 048    | 1, 4, & 5    | 99.50%             | 0.0115       | 0.0017     | 5%          |
| Limestone Loadout Facility (LDC-2)                        | 049    | 1, 4, & 5    | 99.50%             | 0.0058       | 0.0004     | 5%          |
| Limestone Reclaim Hopper, Transfer Points (3DC-01)        | 050    | 1, 4, & 5    | 99.50%             | 0.0003       | 0.0003     | 5%          |
| Limestone Silo (1DC-01)                                   | 051    | 1, 4, & 5    | 99.50%             | 0.0003       | 0.0003     | 5%          |
| Limestone Silo (2DC-01)                                   | 051    | 1, 4, & 5    | 99.50%             | 0.0003       | 0.0003     | 5%          |
| Quick Lime Silo                                           | 052    | 4 & 5        | 99.50%             | 0.0225       | 0.0986     | 5%          |
| Non-Saleable Ash Silo U#1-A                               | 053    | 4 & 5        | 99.50%             | 0.0169       | 0.0739     | 5%          |
| Non-Saleable Ash Silo U#2-A                               | 053    | 4 & 5        | 99.50%             | 0.0169       | 0.0739     | 5%          |
| Saleable Ash Silo 1A                                      | 054    | 4 & 5        | 99.50%             | 0.0338       | 0.1478     | 5%          |
| Saleable Ash Silo 1B                                      | 054    | 4 & 5        | 99.50%             | 0.0338       | 0.1478     | 5%          |
| Saleable Ash Silo 2A                                      | 054    | 4 & 5        | 99.50%             | 0.0338       | 0.1478     | 5%          |
| Saleable Ash Silo 2B                                      | 054    | 4 & 5        | 99.50%             | 0.0338       | 0.1478     | 5%          |
| Railcar Rotary Dumper - Building Emissions                | 023a   | 4 & 5        | 97.00%             | 0.0686       | 0.0440     | 10%         |
| Conveyor C-3 Tunnel Ventilation - 6,400 cfm               | 023b   | 4 & 5        | 98.00%             | 0.0153       | 0.0197     | 5%          |
| Conveyor C-3 Tunnel Ventilation - 6,400 cfm               | 023b   | 1, 3, & 4    | 98.00%             | 0.0153       | 0.0197     | 5%          |
| Conveyor C-3 Tunnel Ventilation - 21,600 cfm              | 023b   | 1 & 4        | 98.00%             | 0.0518       | 0.0664     | 5%          |





**ATTACHMENT 4**  
**SJRPP PSD PERMIT UPDATE**  
**New Table 6 and Permit Conditions**

- DRAFT-  
4/29/99

May \_\_\_\_, 1999

CERTIFIED MAIL - RETURN RECEIPT REQUESTED

Walter Bussells  
Managing Director and CEO  
JEA  
21 West Church Street  
Jacksonville, FL 32202

Re: Permit Amendment--Materials Handling Operations  
St. Johns River Power Park; Duval County  
PSD Permit No. PSD-FL-010(C)

Dear Mr. Bussells:

The Department hereby amends the specific conditions related to materials handling operations in the subject Final Determination (dated March 12, 1982) pursuant to 40 CFR 52.21--Prevention of Significant Deterioration (PSD Permit). The PSD Permit, previously amended on October 28, 1986 and on October 11, 1996, is further amended as follows:

Condition 3 FROM: First Paragraph: no change.

Second Paragraph: Opacity tests shall be performed for emission points three (3) through nineteen (19) of revised Table 6 for compliance purposes. If the opacity limits are not met for those sources that exhaust through a stack, permit compliance shall be determined on the basis of mass emission rate tests.

TO: Second Paragraph: Opacity tests shall be performed for the emission points in Part C of revised Table 6 for compliance purposes, initial only using a Method 9 test. If the opacity limits are not met for those sources that exhaust through a stack, permit compliance shall be determined on the basis of mass emission rate tests. In addition to these initial tests, a Method 9 test shall be conducted annually for the limestone silos, non-saleable ash silos, and saleable ash silos.

Conditions 3A, 3B & 3C: No change.

Tables 2 and 6: Replaced with new Table 6.

Mr. Walter Bussells  
JEA  
May \_\_\_\_, 1999  
Page 2

A copy of this amendment letter shall be attached to and shall become a part of Permit PSD-FL-010.

STATE OF FLORIDA DEPARTMENT  
OF ENVIRONMENTAL PROTECTION

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Howard L. Rhodes, Director  
Division Air Resources Management

SJRPP PSD PERMIT  
PSD-FL-010(C)

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Table 6 – Part A

| Emissions Unit                                                       | SO <sub>2</sub>                                             | NO <sub>x</sub>             | PM                            | Opacity (%) |
|----------------------------------------------------------------------|-------------------------------------------------------------|-----------------------------|-------------------------------|-------------|
| Steam Generating Boiler No. 1<br>(6,144 MMBtu/hr maximum heat input) | 4,669 lb/hr<br>0.76 lb/mmBtu<br>(30-day<br>rolling average) | 3,686 lb/hr<br>0.6 lb/mmBtu | 184 lb/hr<br>0.03<br>lb/mmBtu | 20          |
| Steam Generating Boiler No. 2<br>(6,144 MMBtu/hr maximum heat input) | 4,669 lb/hr<br>0.76 lb/mmBtu<br>(30-day<br>rolling average) | 3,686 lb/hr<br>0.6 lb/mmBtu | 184 lb/hr<br>0.03<br>lb/mmBtu | 20          |
| Cooling Towers                                                       |                                                             |                             | 67 lb/hr<br>(each tower)      | N/A         |

SJRPP PSD PERMIT  
PSD-FL-010(C)

Table 6 – Part B

| Existing Materials Handling Operations                    | PM/PM10 (lb/hr) | Opacity (%) |
|-----------------------------------------------------------|-----------------|-------------|
| Railcar Rotary Dumper – Building Emissions                | 0.15/0.07       | 10          |
| Conveyor C-3 Tunnel Ventilation – 6,400 cfm               | 0.32/0.02       | 5           |
| Conveyor C-3 Tunnel Ventilation – 6,400 cfm               | 0.32/0.02       | 5           |
| Conveyor C-3 Tunnel Ventilation – 21,600 cfm              | 0.10/0.05       | 5           |
| Shiphold                                                  | 0.54/0.26       | 10          |
| Unloader Hopper and Spillage Collector Transfers          | 0.28/0.13       | 10          |
| Ship Unloader Hopper, Transfer to CT-1, Spillage Conveyor | 1.0/0.48        | 10          |
| Transfer Station No. 1                                    | 0.04/0.02       | 5           |
| Transfer Station No. 2                                    | 0.04/0.02       | 5           |
| Transfer Station No. 3                                    | 0.05/0.02       | 5           |
| Transfer Station No. 4                                    | 0.04/0.02       | 5           |
| Transfer Station No. 5                                    | 0.04            | 5           |
| Transfer Station No. 6                                    | 0.04            | 5           |
| Transfer Station No. 7                                    | 0.04            | 5           |
| Transfer Point 9GC-04 to 9GC-05                           | 0.007           | 5           |
| Stacker/Reclaimer (Stacker Mode)                          | 2.29            | 10          |
| Stacker                                                   | 1.15            | 10          |
| Reclaimer                                                 | 0.43            | 10          |
| Petroleum Coke Reclaimer System                           | 0.32            | 10          |
| Emergency Reclaim Hoppers – Loadout                       | 0.29            | 10          |
| Limestone Reclaim Hopper                                  | 0.14            | 10          |
| Limestone Railcar Dumper                                  | 0.005           | 10          |
| Limestone Loadout                                         | 0.005           | 10          |
| Limestone Truck Loadout & Transfer                        | 0.1             | 10          |
| Limestone Storage Pile #1 – Existing                      | 0.26/0.26       | 10          |
| Limestone Storage Pile #2 - Fuel Yard                     | 0.12            | 10          |
| Coal Pile                                                 | 0.26/0.26       | 10          |
| Petroleum Coke Pile                                       | 0.71/0.71       | 10          |
| Gypsum Storage Pile (Non-Commercial)                      | 0.07            | 10          |
| Fly Ash Loadouts 1A                                       | 0.06            | 10          |
| Fly Ash Loadouts 1B                                       | 0.06            | 10          |
| Fly Ash Loadouts 2A                                       | 0.06            | 10          |
| Fly Ash Loadouts 2B                                       | 0.06            | 10          |
| Bottom Ash Loadouts 1A                                    | 0.09            | 10          |
| Bottom Ash Loadouts 1B                                    | 0.09            | 10          |
| Bottom Ash Loadouts 2A                                    | 0.09            | 10          |
| Bottom Ash Loadouts 2B                                    | 0.09            | 10          |
| Gypsum Dewatering Building                                | 0.04            | 5           |
| Gypsum Storage Enclosure                                  | 0.008           | 5           |
| Gypsum Truck Loadout                                      | 0.28            | 5           |
| Solid Waste Disposal Area                                 | 0.31            | 10          |
| Unpaved Road, By-Product Transport                        | 0.58            | 10          |
| Rotary Railcar Unloader, Fuel Transfer Points (DC-1)      | 0.17/0.08       | 5           |
| Fuel Transfer Building                                    | 0.65/0.31       | 10          |
| Fuel Handling Building (DC-3)                             | 0.24            | 5           |
| Unit #1 Fuel Storage Bins (DC-4)                          | 0.009           | 5           |
| Unit #2 Fuel Storage Bins (DC-5)                          | 0.009           | 5           |
| Railcar Unloader, Limestone Transfer Points (LDC-1)       | 0.02            | 5           |

**SJRPP PSD PERMIT**  
**PSD-FL-010(C)**

|                                    |       |   |
|------------------------------------|-------|---|
| Limestone Loadout Facility (LDC-2) | 0.006 | 5 |
|------------------------------------|-------|---|

Table 6 – Part C

| <b>New Materials Handling Operations (May ___, 1999)</b>                      | <b>PM/PM10 (lb/hr)</b> | <b>Opacity (%)</b> |
|-------------------------------------------------------------------------------|------------------------|--------------------|
| Hopper Belt, Spillage Conveyors, and DC-1 Transfer Points - New Ship Unloader | 0.13/0.06              | 10                 |
| Shiphold – New                                                                | 0.54/0.26              | 10                 |
| Unloader Hopper and Spillage Collector Transfers - New Ship Unloader          | 0.28/0.13              | 10                 |
| Enclosed Pile – Vehicle Activities                                            | 0.04/0.01              | 5                  |
| Enclosed Storage Pile - 3 Transfer Points                                     | 0.13/0.06              | 5                  |
| Transfer Tower D-1                                                            | 0.04/0.02              | 5                  |
| Transfer Tower D-2                                                            | 0.04/0.02              | 5                  |
| New Blend Hopper                                                              | 0.12/0.06              | 5                  |
| New Transfer Tower #1-NGS                                                     | 0.09/0.04              | 5                  |
| New Transfer Tower #2-NGS                                                     | 0.09/0.04              | 5                  |
| New Stacker                                                                   | 0.66/0.31              | 10                 |
| NGS Reclaimer                                                                 | 0.52/0.24              | 10                 |
| SJRPP Reclaimer                                                               | 0.52/0.24              | 10                 |
| New Reclaim Transfer Tower                                                    | 0.04/0.02              | 5                  |
| New Transfer Tower #3-NGS                                                     | 0.08/0.04              | 5                  |
| New Transfer Tower #4-NGS                                                     | 0.06/0.03              | 5                  |

Notes:

1. PM 10 limits apply only to new and modified emission points. If only one standard is listed, the standard applies to PM emissions.
2. The total coal and petroleum coke throughput rate shall not exceed 7.62 million tons per year and the total limestone throughput rate shall not exceed 2.05 million tons per year for SJRPP and Northside Generating Station combined.

**ATTACHMENT 5**  
**SJRPP PSD PERMIT UPDATE**  
**Air Construction Permit Application**





**Owner/Authorized Representative or Responsible Official**

1. Name and Title of Owner/Authorized Representative or Responsible Official:

Name: Walter P. Bussells

Title: Managing Director and Chief Executive Officer

2. Owner/Authorized Representative or Responsible Official Mailing Address:

Organization/Firm: JEA

Street Address: 21 West Church Street

City: Jacksonville

State: FL

Zip Code: 32202

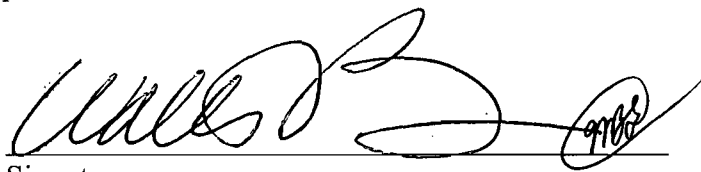
3. Owner/Authorized Representative or Responsible Official Telephone Numbers:

Telephone: 904-665-7220

Fax: 904-665-7366

4. Owner/Authorized Representative or Responsible Official Statement:

*I, the undersigned, am the owner or authorized representative\* of the non-Title V source addressed in this Application for Air Permit or the responsible official, as defined in Rule 62-210.200, F.A.C., of the Title V source addressed in this application, whichever is applicable. 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. 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 any permitted emissions unit.*



Signature

5/3/99

Date

\* Attach letter of authorization if not currently on file.

### Scope of Application

| <b>Emissions Unit ID</b> | <b>Description of Emissions Unit</b>                        | <b>Permit Type</b> |
|--------------------------|-------------------------------------------------------------|--------------------|
| 023                      | SJRPP - Materials Handling & Storage Operations             | ACM1               |
| 043                      | SJRPP - Rotary Railcar Dumper, Transfer Points (DC-1)       | ACM1               |
| 046                      | SJRPP - Fuel Handling Building (DC-3)                       | ACM1               |
| 047                      | SJRPP - Fuel Storage Bins (DC-4 & DC-5)                     | ACM1               |
| 048                      | SJRPP - Railcar Unloader, Limestone Transfer Points (LDC-1) | ACM1               |
| 049                      | SJRPP - Limestone Loadout Facility (LDC-2)                  | ACM1               |
| 050                      | SJRPP - Limestone Reclaim Tunnel, Transfer Points (3DC-01)  | ACM1               |
| 051                      | SJRPP - Limestone Silos (1DC-01 & 2DC-01)                   | ACM1               |
| 052                      | SJRPP - Quick Lime Silo                                     | ACM1               |
| 053                      | SJRPP - Non-Saleable Ash Silos (U#1-A & U#2-A)              | ACM1               |
| 054                      | SJRPP - Saleable Ash Silos (1A, 1B, 2A, & 2B)               | ACM1               |

**Purpose of Application and Category**

Category I: All Air Operation Permit Applications Subject to Processing Under Chapter 62-213, F.A.C.

This Application for Air Permit is submitted to obtain :

- ☐ Initial air operation permit under Chapter 62-213, F.A.C., for an existing facility which is classified as a Title V source.
  
- ☐ Initial air operation permit under Chapter 62-213, F.A.C., for a facility which, upon start up of one or more newly constructed or modified emissions units addressed in this application, would become classified as a Title V source.

Current construction permit number :

- ☐ Air operation permit renewal under Chapter 62-213, F.A.C., for a Title V source.

Operation permit to be renewed :

- ☐ Air operation permit revision for a Title V source to address one or more newly constructed or modified emissions units addressed in this application.

Current construction permit number :

Operation permit to be revised :

- ☐ Air operation permit revision or administrative correction for a Title V source to address one or more proposed new or modified emissions units and to be processed concurrently with the air construction permit application.

Operation permit to be revised/corrected :

- ☐ ] Air operation permit revision for a Title V source for reasons other than construction or modification of an emissions unit.

Operation permit to be revised :

Reason for revision :

Category II : All Air Operation Permit Applications Subject to Processing Under Rule 62-210.300(2)(b), F.A.C.

This Application for Air Permit is submitted to obtain :

- ☐ ] Initial air operation permit under Rule 62-210.300(2)(b), F.A.C., for an existing facility seeking classification as a synthetic non-Title V source.

Current operation/construction permit number(s) :

- ☐ ] Renewal air operation permit under Rule 62-210.300(2)(b), F.A.C., for a synthetic non-Title V source.

Operation permit to be renewed :

- ☐ ] Air operation permit revision for a synthetic non-Title V source.

Operation permit to be revised :

Reason for revision :

Category III : All Air Construction Permit Applications for All Facilities and Emissions Units

This Application for Air Permit is submitted to obtain :

- ☐ ] Air construction permit to construct or modify one or more emissions units within a facility (including any facility classified as a Title V source).

I. Part 4 - 2

Current operation permit number(s), if any :

- ☒ Air construction permit to make federally enforceable an assumed restriction on the potential emissions of one or more existing, permitted emissions units.

Current operation permit number(s) :  
0310045-002-AV

- ☐ Air construction permit for one or more existing, but unpermitted, emissions units.

### **Application Processing Fee**

Check one :

[ ] Attached - Amount : \$0.00 [X] Not Applicable.

### **Construction/Modification Information**

|                                                                                                                                                                                    |             |
|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------|
| 1. Description of Proposed Project or Alterations :                                                                                                                                |             |
| PSD Permit Update - St. Johns River Power Park (SJRPP)                                                                                                                             |             |
| JEA seeks to update the PSD permit and Site Certification to reflect the "As-Built" materials handling operations and the maximum potential throughput rates for these operations. |             |
| All changes associated with the repowering of the NGS are being presented in a separate PSD application for that project.                                                          |             |
| Revisions to the Title V Operating Permit will be handled following issuance of a revised PSD permit.                                                                              |             |
| 2. Projected or Actual Date of Commencement of Construction :                                                                                                                      | 31-May-1982 |
| 3. Projected Date of Completion of Construction :                                                                                                                                  | 01-Jun-1987 |

### **Professional Engineer Certification**

|                                                        |                             |
|--------------------------------------------------------|-----------------------------|
| 1. Professional Engineer Name : Darrel J. Graziani     |                             |
| Registration Number : 44685                            |                             |
| 2. Professional Engineer Mailing Address :             |                             |
| Organization/Firm : Foster Wheeler Environmental Corp. |                             |
| Street Address : Suite 100, 759 S. Federal Hwy         |                             |
| City : Stuart                                          | State : FL Zip Code : 34994 |
| 3. Professional Engineer Telephone Numbers :           |                             |
| Telephone : (561)781-3439                              | Fax : (561)781-3411         |

I. Part 5 - 1

4. Professional Engineer Statement:

*I, the undersigned, hereby certify, except as particularly noted herein\*, that:*

*(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*

*(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.*

*If the purpose of this application is to obtain a Title V source 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 schedule is submitted with this application.*

*If the purpose of this application is to obtain an air construction permit for one or more proposed new or modified emissions units (check here [ X ] 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.*

*If the purpose of this application is to obtain an initial air operation permit or operation permit revision 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.*

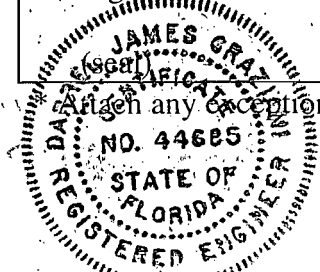
*Daniel J. Gugin*

Signature

Date

*4-30-99*

*I have read and agree to certification statement.*



### **Application Contact**

1. Name and Title of Application Contact :

Name : Bert Gianazza

Title : Professional Engineer

2. Application Contact Mailing Address :

Organization/Firm : JEA

Street Address : 21 West Church Street

City : Jacksonville

State : FL Zip Code : 32202

3. Application Contact Telephone Numbers :

Telephone : (904)665-6247

Fax : (904)665-7376

### **Application Comment**



## SJRPP - PSD Permit Update

The recently finalized Title V Operating Permit for SJRPP addresses the various materials handling operations within Emissions Units 022 and 023. Emissions Unit 022, Limestone and Flyash Handling, and Emissions Unit 023, Coal Storage Yard and Transfer Systems address both point and nonpoint source emissions.

JEA seeks to update the SJRPP PSD Permit and Conditions of Certification to reflect the "As-Built" materials handling operations, maximum short-term throughput rates, and required annual throughput rates. In addition, JEA seeks to separate the point sources from the nonpoint sources into individual emissions units.

For purposes of individual emissions unit identifications, JEA proposes the following:

- Emissions Unit 043: SJRPP - Rotary Railcar Unloader, Fuel Transfer Points (DC-1)
- Emissions Unit 046: SJRPP - Fuel Handling Building (DC-3)
- Emissions Unit 047: SJRPP - Unit #1 & Unit #2 Fuel Storage Bins (DC-4 & DC-5)
- Emissions Unit 048: SJRPP - Railcar Unloader, Limestone Transfer Points (LDC-1)
- Emissions Unit 049: SJRPP - Limestone Loadout Facility (LDC-2)
- Emissions Unit 050: SJRPP - Limestone Reclaim Hopper, Transfer Points (3DC-01)
- Emissions Unit 051: SJRPP - Limestone Silos, (1DC-01 & 2DC-01)
- Emissions Unit 052: SJRPP - Quick Lime Silo
- Emissions Unit 053: SJRPP - Non-Saleable Ash Silos (2x)
- Emissions Unit 054: SJRPP - Saleable Ash Silos (4x)

The revised Emissions Unit 023 will be limited to nonpoint sources including the ship unloading operation, conveyor belts, transfer points, storage piles (Coal, Petroleum Coke, Limestone, Gypsum, Flyash, and Bottom Ash), loadout operations, and reclaim operations.

Activities authorized under existing emissions Unit 022 will be covered under either revised Emissions Unit EU023 for the nonpoint sources or under one of the above listed point sources.

## II. FACILITY INFORMATION

### A. GENERAL FACILITY INFORMATION

#### Facility, Location, and Type

|                                                                                                                              |                                   |                                             |                                  |
|------------------------------------------------------------------------------------------------------------------------------|-----------------------------------|---------------------------------------------|----------------------------------|
| 1. Facility UTM Coordinates :<br>Zone : 17                      East (km) : 446.90                      North (km) : 3366.30 |                                   |                                             |                                  |
| 2. Facility Latitude/Longitude :<br>Latitude (DD/MM/SS) : 30 25 51      Longitude (DD/MM/SS) : 81 33 3                       |                                   |                                             |                                  |
| 3. Governmental<br>Facility Code :<br>4                                                                                      | 4. Facility Status<br>Code :<br>A | 5. Facility Major<br>Group SIC Code :<br>49 | 6. Facility SIC(s) :<br><br>4911 |
| 7. Facility Comment :                                                                                                        |                                   |                                             |                                  |

## II. FACILITY INFORMATION

### A. GENERAL FACILITY INFORMATION

#### Facility Contact

1. Name and Title of Facility Contact :

Bert Gianazza  
Professional Engineer

2. Facility Contact Mailing Address :

Organization/Firm : JEA  
Street Address : 21 West Church Street  
City : Jacksonville State : FL Zip Code : 32202

3. Facility Contact Telephone Numbers :

Telephone : (904)665-6247

Fax : (904)665-7376

### Facility Regulatory Classifications

|                                                                           |   |
|---------------------------------------------------------------------------|---|
| 1. Small Business Stationary Source?                                      | N |
| 2. Title V Source?                                                        | Y |
| 3. Synthetic Non-Title V Source?                                          | N |
| 4. Major Source of Pollutants Other than Hazardous Air Pollutants (HAPs)? | Y |
| 5. Synthetic Minor Source of Pollutants Other than HAPs?                  | N |
| 6. Major Source of Hazardous Air Pollutants (HAPs)?                       | Y |
| 7. Synthetic Minor Source of HAPs?                                        | N |
| 8. One or More Emissions Units Subject to NSPS?                           | Y |
| 9. One or More Emission Units Subject to NESHAP?                          | N |
| 10. Title V Source by EPA Designation?                                    | Y |
| 11. Facility Regulatory Classifications Comment :                         |   |

II. Part 2 - 1

## B. FACILITY REGULATIONS

### Rule Applicability Analysis

Construction of the SJRPP's materials handling operations was authorized by the issuance of the Site Certification and PSD Permit in 1982. Following initial authorization, both the Site Certification and PSD Permit were revised in 1986 to reflect authorization to construct the overland conveyor system. The overland conveyor system is used to transport coal, petroleum coke, and limestone from the St Johns River Coal Terminal (SJRCT) to SJRPP.

Through the PSD Review Process, the materials handling operations were required to apply the Best Available Control Technology (BACT) which equated to a 10 percent opacity limit.

In 1997, JEA received authorization to fire a blend of coal and petroleum coke in the SJRPP Boilers. Associated with the authorization was permission to construct a temporary petroleum coke reclaim system. The permission for the temporary petroleum coke reclaim system was based on an understanding that following initial testing and performance acceptance, JEA would update the Site Certification and PSD Permit to reflect the addition of a permanent system. JEA proposes to make the temporary system permanent through this application. The system is capable of reclaiming 400 TPH and 3.5 million TPY of petroleum coke. Potential emissions associated with the systems capabilities were estimated at 0.7 lb/hr and 3 TPY excluding any offsets from reduced coal usage and current limitations on petroleum coke usage. The addition of the permanent system is not subject to PSD Review and, based on potential emissions, can be considered insignificant.

In 1998, JEA provided notification of its plans to use the ship unloader and overland conveyor system to receive and transport limestone from SJRCT to SJRPP. The use of the ship unloader and overland conveyor system to transport limestone is regulated under 40 CFR Part 60, Subpart OOO. Potential emission increases associated with the use of the ship unloader and overland conveyor system were estimated at 2.3 lb/hr and 0.96 TPY. The use of the ship unloader and overland conveyor system is not subject to PSD Review and, based on potential emissions, can also be considered insignificant.

The SJRPP and the adjacent Northside Generating Station (NGS) are consider major sources of air pollution under the PSD Program, the Title V Operating Permit Program, and the Hazardous Air Pollutant Program. Under the PSD Program, SJRPP is considered a new source.

## **B. FACILITY REGULATIONS**

### **List of Applicable Regulations**

Rule 62-213.420, Permit Applications

Rule 62-213.900(1), F.A.C., Forms and Instructions

Rule 62-212.300, F.A.C., General - Preconstruction Review Requirements

Rule 62-296.320(1), F.A.C., Volatile Organic Compound Emissions or Organic Solvent Emissions

Rule 62-296.320(2), F.A.C., Objectionable Odor Prohibited

Rule 62-296.320(3), F.A.C., Industrial, Commercial, and Municipal Open Burning Prohibited

Rule 62-296.320(4)(b), F.A.C., General Visible Emissions Standard

Rule 62-296.320(4)(c), F.A.C., Unconfined Emissions of Particulate Matter

Rule 62-256.300, F.A.C., Prohibitions - Open Burning

Rule 62-256.500, F.A.C., Land Clearing

Rule 62-256.600, F.A.C., Industrial, Commercial, Municipal, and Research Open Burning

Rule 62-256.700(3), F.A.C., Open Burning Allowed

Title X. Environmental Affairs Chapter 360 Environmental Regulation, as noted

Section 360.109, Entry on Property

II. Part 3b - 1

DEP Form No. 62-210.900(1) - Form  
Effective : 3-21-96

## **B. FACILITY REGULATIONS**

### **List of Applicable Regulations**

Section 360.113, Public Health, Safety or Welfare Determinations

Section 360.301, Compliance Plans; Compliance Agreements

Section 360.306, Inspection by Director or Authorized Representative;

Section 360.307, Collection of Fines; Civil Actions

Section 360.409, Emergency Proceedings

Section 360.501, Liability for Violation

Section 360.502, Punitive Damages

Section 360.504, Indemnification, Hold Harmless etc. agreements or conveyances; subrogation rights

Section 360.701, Environmental Protection Board Ticketing Authority; Minor Violations

Section 360.702, Collection of Civil Penalties; Civil Actions

Title X. Environmental Affairs Chapter 362 Air and Water Pollution, as noted

Section 362.106, Chapter 360 Applicable

Section 362.109, Violations and Penalties

Section 362.110, Civil Penalties

II. Part 3b - 2

DEP Form No. 62-210.900(1) - Form  
Effective : 3-21-96

## **B. FACILITY REGULATIONS**

### **List of Applicable Regulations**

Section 362.111, Assessment and Recovery of Civil Penalty

Title X. Environmental Affairs Chapter 376 E Odor Control, as noted

Section 376.105, Chapter 360 Applicable

Section 376.106, Enforcement

Section 376.110, Violations and Penalties

Section 376.111, Civil Penalties

Section 376.112, Assessment and Recovery of Civil Penalty

Jacksonville Environmental Protection Board Rules

Rule 1, Part VII Fees and Collection of Fees

Rule 1, Part VIII Investigations - Right of Entry

Rule 2, Part I General Provisions

Rule 2.104, Registration and Reports

Rule 2.106, General Restrictions

Rule 2.107, Air Pollution Prohibited

II. Part 3b - 3

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Effective : 3-21-96



## **B. FACILITY REGULATIONS**

### **List of Applicable Regulations**

Rule 2.109, Investigations - Right of Entry

Rule 2.110, Penalties and Injunctive Relief

Rule 2.201, Adoption of Chapter 62-204, Florida Administrative Code, as applicable

Rule 2.301, Adoption of Chapter 62-210, Florida Administrative Code, as applicable

40 CFR Part 61, Subpart M - National Emission Standards for Asbestos

Rule 62-204.800(9)(b)8., F.A.C., Adoption of 40 CFR 61 Subpart M except for Figure 3, Section 61.145

Rule 62-257.301, F.A.C., Notification Procedure and Fee

Rule 62-257.400, F.A.C., Fee Schedule

Rule 62-257.900(1), F.A.C., DEP Form - Notice of Asbestos Removal Project

40 CFR Part 61, Appendix C - Quality Assurance Procedures

40 CFR Part 63.40(c), MACT Determinations - Exclusion for Electric Utility Steam Generating Units

40 CFR Part 82.35(a), Prohibitions - Repair and Service of Motor Vehicle Air Conditioner (MVAC)

40 CFR Part 82.42(a), Certification Requirements for Persons repairing or servicing MVACs

II. Part 3b - 4

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## **B. FACILITY REGULATIONS**

### **List of Applicable Regulations**

40 CFR Part 82.42(b), Recordkeeping Requirements for persons owning refrigerant recycling equipment

Rule 62-204.800(21)(b), F.A.C., Adoption of 40 CFR Part 82, Subpart B

Rule 62-281.100, F.A.C., Purpose, Scope, and Compliance Requirements for Affected Establishments

Rule 62-4.130, F.A.C., Plant Operations - Problems

Rule 62-4.160, F.A.C., Permit Conditions

Rule 62-210.300(1), F.A.C., Air Construction Permits

Rule 62-210.300(2), F.A.C., Air Operation Permits

Rule 62-210.300(3)(a), F.A.C., Categorical Exemptions

Rule 62-210.300(3)(b)(1), F.A.C., Generic Emissions Unit Exemptions

Rule 62-210.350(1), F.A.C., Public Notice of Proposed Agency Action

Rule 2.501, Adoption of Chapter 62-213, Florida Administrative Code, as applicable

Rule 2.701, Adoption of Chapter 62-256, Florida Administrative Code, as applicable

Rule 2.1001, Adoption of Chapter 62-296 Florida Administrative Code, as applicable

Rule 2.1101, Adoption of Chapter 62-297, Florida Administrative Code, as applicable

II. Part 3b - 5

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## **B. FACILITY REGULATIONS**

### **List of Applicable Regulations**

Rule 2.1201, General Standard for Volatile Organic Compounds

Rule 2.1202 C.1., Emissions from Ships and Locomotives - Prohibited Acts

Rule 2.1202 F., Emissions from Ships and Locomotives - Compliance Test Method

Rule 2.1202 I., Emissions from Ships and Locomotives - Air Pollution Nuisance Prohibited

Rule 2.1203 E., Air Pollution Nuisance Prohibited

Rule 2.1301, Adoption of Chapter 62-4, Florida Administrative Code (as noted)

Rule 62-4.040, F.A.C., Exemptions

Rule 62-210.370(3), F.A.C., Annual Operating Report

Rule 62-210.900, F.A.C., Forms and Instructions

40 CFR Part 82.154, Prohibitions

40 CFR Part 82.156, Required Practices

40 CFR Part 82.161(a), Technician Certification

40 CFR Part 82.162, Certification by Owners of Recovery and Recycling Equipment

40 CFR Part 82.164, Reclaimer Certification

### **II. Part 3b - 6**

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Effective : 3-21-96

## **B. FACILITY REGULATIONS**

### **List of Applicable Regulations**

40 CFR Part 82.166, Reporting and Recordkeeping Requirements for Owners/Operators

Rule 62-204.800(21)(e), F.A.C., Adoption of 40 CFR Part 82, Subpart F

40 CFR Part 68, Chemical Accident Prevention Provisions

## C. FACILITY POLLUTANTS

### Facility Pollutant Information

| 1. Pollutant Emitted | 2. Pollutant Classification |
|----------------------|-----------------------------|
| CO                   | A                           |
| NOX                  | A                           |
| SO2                  | A                           |
| PM                   | A                           |
| VOC                  | A                           |
| PB                   | B                           |
| H114                 | B                           |
| FL                   | B                           |
| SAM                  | B                           |
| HAPS                 | A                           |
| H106                 | A                           |
| PM10                 | A                           |

## D. FACILITY POLLUTANT DETAIL INFORMATION

### Facility Pollutant Information

Pollutant 1

|                                   |                                                                            |                    |
|-----------------------------------|----------------------------------------------------------------------------|--------------------|
| 1. Pollutant Emitted :            | CO                                                                         |                    |
| 2. Requested Emissions Cap :      | 0.0000 (lbs/hour)                                                          | 0.0000 (tons/year) |
| 3. Basis for Emissions Cap Code : |                                                                            |                    |
| 4. Facility Pollutant Comment :   | No Facility Wide Cap or Multi-unit Cap has been assigned to this facility. |                    |

II. Part 4b - 1

## D. FACILITY POLLUTANT DETAIL INFORMATION

### Facility Pollutant Information

Pollutant 2

|                                   |                                                                            |                    |
|-----------------------------------|----------------------------------------------------------------------------|--------------------|
| 1. Pollutant Emitted :            | NOX                                                                        |                    |
| 2. Requested Emissions Cap :      | (lbs/hour)                                                                 | 0.0000 (tons/year) |
| 3. Basis for Emissions Cap Code : |                                                                            |                    |
| 4. Facility Pollutant Comment :   | No Facility Wide Cap or Multi-unit Cap has been assigned to this facility. |                    |

II. Part 4b - 2

## D. FACILITY POLLUTANT DETAIL INFORMATION

### Facility Pollutant Information

Pollutant 3

|                                   |                                                                            |                    |
|-----------------------------------|----------------------------------------------------------------------------|--------------------|
| 1. Pollutant Emitted :            | SO2                                                                        |                    |
| 2. Requested Emissions Cap :      | (lbs/hour)                                                                 | 0.0000 (tons/year) |
| 3. Basis for Emissions Cap Code : |                                                                            |                    |
| 4. Facility Pollutant Comment :   | No Facility Wide Cap or Multi-unit Cap has been assigned to this facility. |                    |

II. Part 4b - 3



## D. FACILITY POLLUTANT DETAIL INFORMATION

### Facility Pollutant Information

Pollutant 4

|                                   |                                                                            |
|-----------------------------------|----------------------------------------------------------------------------|
| 1. Pollutant Emitted :            | PM                                                                         |
| 2. Requested Emissions Cap :      | (lbs/hour) 0.0000 (tons/year)                                              |
| 3. Basis for Emissions Cap Code : |                                                                            |
| 4. Facility Pollutant Comment :   | No Facility Wide Cap or Multi-unit Cap has been assigned to this facility. |

II. Part 4b - 4

## D. FACILITY POLLUTANT DETAIL INFORMATION

### Facility Pollutant Information

Pollutant , 5

|                                   |                                                                            |                    |
|-----------------------------------|----------------------------------------------------------------------------|--------------------|
| 1. Pollutant Emitted :            | VOC                                                                        |                    |
| 2. Requested Emissions Cap :      | (lbs/hour)                                                                 | 0.0000 (tons/year) |
| 3. Basis for Emissions Cap Code : |                                                                            |                    |
| 4. Facility Pollutant Comment :   | No Facility Wide Cap or Multi-unit Cap has been assigned to this facility. |                    |

II. Part 4b - 5

## D. FACILITY POLLUTANT DETAIL INFORMATION

### Facility Pollutant Information

Pollutant 6

|                                   |                                                                            |             |
|-----------------------------------|----------------------------------------------------------------------------|-------------|
| 1. Pollutant Emitted :            | PB                                                                         |             |
| 2. Requested Emissions Cap :      | (lbs/hour)                                                                 | (tons/year) |
| 3. Basis for Emissions Cap Code : |                                                                            |             |
| 4. Facility Pollutant Comment :   | No Facility Wide Cap or Multi-unit Cap has been assigned to this facility. |             |

II. Part 4b - 6

## D. FACILITY POLLUTANT DETAIL INFORMATION

### Facility Pollutant Information

Pollutant 7

|                                   |                                                                            |             |
|-----------------------------------|----------------------------------------------------------------------------|-------------|
| 1. Pollutant Emitted :            | H114                                                                       |             |
| 2. Requested Emissions Cap :      | (lbs/hour)                                                                 | (tons/year) |
| 3. Basis for Emissions Cap Code : |                                                                            |             |
| 4. Facility Pollutant Comment :   | No Facility Wide Cap or Multi-unit Cap has been assigned to this facility. |             |

II. Part 4b - 7

## D. FACILITY POLLUTANT DETAIL INFORMATION

### Facility Pollutant Information

Pollutant 8

|                                   |                                                                            |             |
|-----------------------------------|----------------------------------------------------------------------------|-------------|
| 1. Pollutant Emitted :            | FL                                                                         |             |
| 2. Requested Emissions Cap :      | (lbs/hour)                                                                 | (tons/year) |
| 3. Basis for Emissions Cap Code : |                                                                            |             |
| 4. Facility Pollutant Comment :   | No Facility Wide Cap or Multi-unit Cap has been assigned to this facility. |             |

II. Part 4b - 8

## D. FACILITY POLLUTANT DETAIL INFORMATION

### Facility Pollutant Information

Pollutant 9

|                                   |                                                                            |             |
|-----------------------------------|----------------------------------------------------------------------------|-------------|
| 1. Pollutant Emitted :            | SAM                                                                        |             |
| 2. Requested Emissions Cap :      | (lbs/hour)                                                                 | (tons/year) |
| 3. Basis for Emissions Cap Code : |                                                                            |             |
| 4. Facility Pollutant Comment :   | No Facility Wide Cap or Multi-unit Cap has been assigned to this facility. |             |

II. Part 4b - 9

## D. FACILITY POLLUTANT DETAIL INFORMATION

### Facility Pollutant Information

Pollutant 10

|                                                                                                                   |            |             |
|-------------------------------------------------------------------------------------------------------------------|------------|-------------|
| 1. Pollutant Emitted :                      HAPS                                                                  |            |             |
| 2. Requested Emissions Cap :                                                                                      |            |             |
|                                                                                                                   | (lbs/hour) | (tons/year) |
| 3. Basis for Emissions Cap Code :                                                                                 |            |             |
| 4. Facility Pollutant Comment :<br><br>No Facility Wide Cap or Multi-unit Cap has been assigned to this facility. |            |             |

II. Part 4b - 10

## D. FACILITY POLLUTANT DETAIL INFORMATION

### Facility Pollutant Information

Pollutant 11

|                                   |                                                                            |             |
|-----------------------------------|----------------------------------------------------------------------------|-------------|
| 1. Pollutant Emitted :            | H106                                                                       |             |
| 2. Requested Emissions Cap :      | (lbs/hour)                                                                 | (tons/year) |
| 3. Basis for Emissions Cap Code : |                                                                            |             |
| 4. Facility Pollutant Comment :   | No Facility Wide Cap or Multi-unit Cap has been assigned to this facility. |             |

II. Part 4b - 11



## D. FACILITY POLLUTANT DETAIL INFORMATION

### Facility Pollutant Information

Pollutant 12

|                                   |                                                                            |
|-----------------------------------|----------------------------------------------------------------------------|
| 1. Pollutant Emitted :            | PM10                                                                       |
| 2. Requested Emissions Cap :      | (lbs/hour) 0.0000 (tons/year)                                              |
| 3. Basis for Emissions Cap Code : |                                                                            |
| 4. Facility Pollutant Comment :   | No Facility Wide Cap or Multi-unit Cap has been assigned to this facility. |

II. Part 4b - 12

## **D. FACILITY SUPPLEMENTAL INFORMATION**

### **Supplemental Requirements for All Applications**

|                                                                        |     |
|------------------------------------------------------------------------|-----|
| 1. Area Map Showing Facility Location :                                | F-1 |
| 2. Facility Plot Plan :                                                | F-2 |
| 3. Process Flow Diagram(s) :                                           | NA  |
| 4. Precautions to Prevent Emissions of Unconfined Particulate Matter : | F-3 |
| 5. Fugitive Emissions Identification :                                 | F-3 |
| 6. Supplemental Information for Construction Permit Applic             | F-4 |

### **Additional Supplemental Requirements for Category I Applications Only**

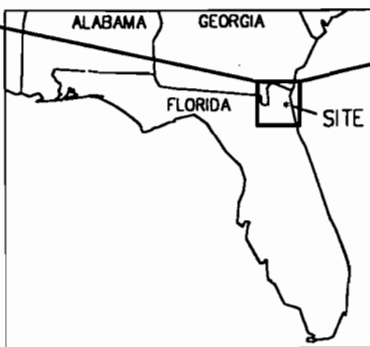
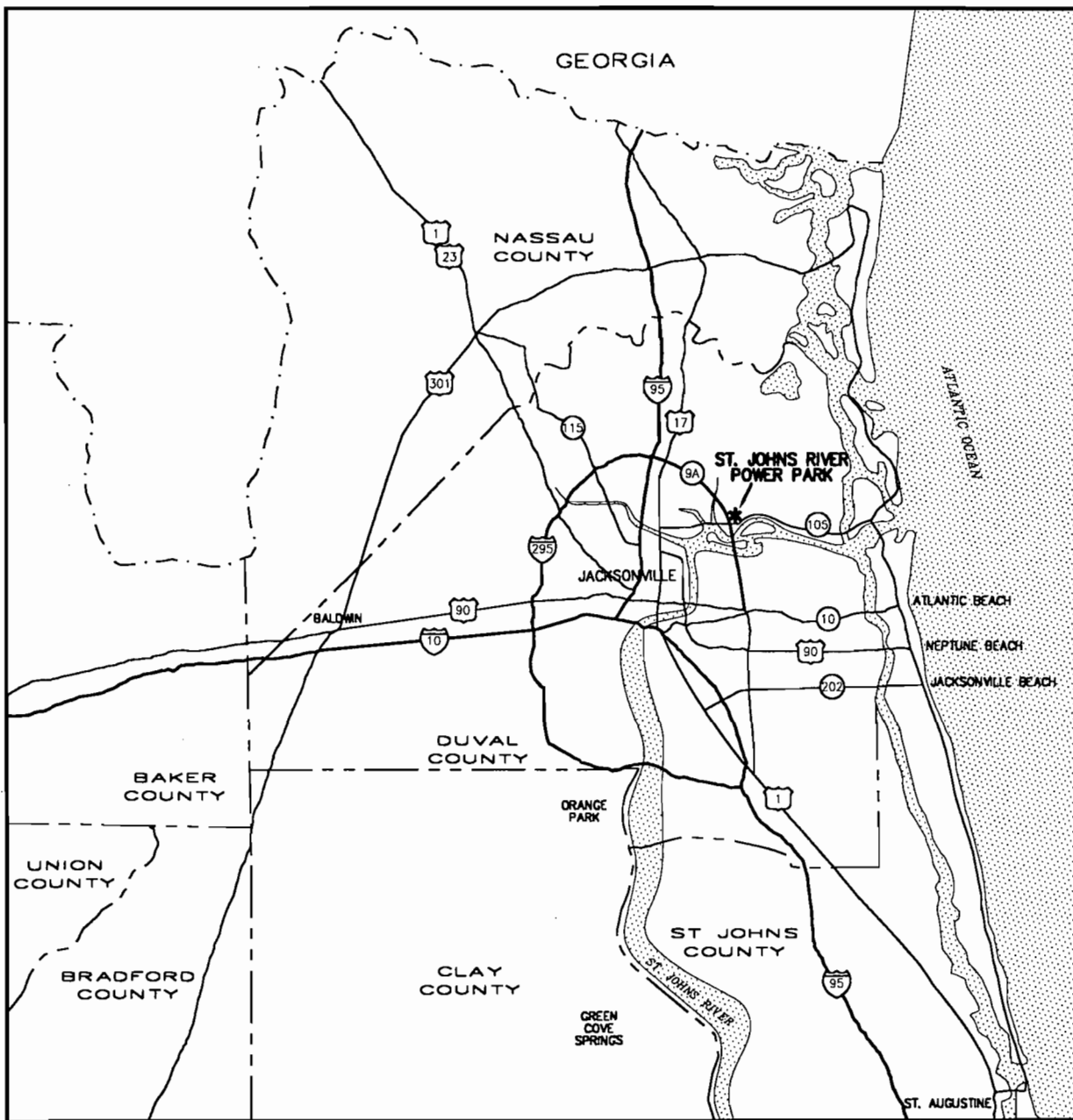
|                                                 |
|-------------------------------------------------|
| 7. List of Proposed Exempt                      |
| 8. List of Equipment/Activities Regulated under |
| 9. Alternative Methods of Operation :           |
| 10. Alternative Modes of Operation (Emissions   |
| 11. Identification of Additional Applicable     |
| 12. Compliance Assurance Monitoring             |
| 13. Risk Management Plan Verification :         |
| 14. Compliance Report and Plan :                |
| 15. Compliance Certification (Hard-copy Requir  |

II. Part 5 - 2

DEP Form No. 62-210.900(1) - Form  
Effective : 3-21-96

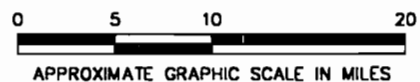
**FACILITY SUPPLEMENTAL INFORMATION**  
**St Johns River Power Park**

**ATTACHMENT F-1**  
**Area Map/Facility Location Map**



#### LEGEND

- INTERSTATE HIGHWAY
- U.S. HIGHWAY
- STATE HIGHWAY



APPROXIMATE GRAPHIC SCALE IN MILES

#### JEA ST. JOHNS RIVER POWER PARK PSD PERMIT UPDATE AREA MAP

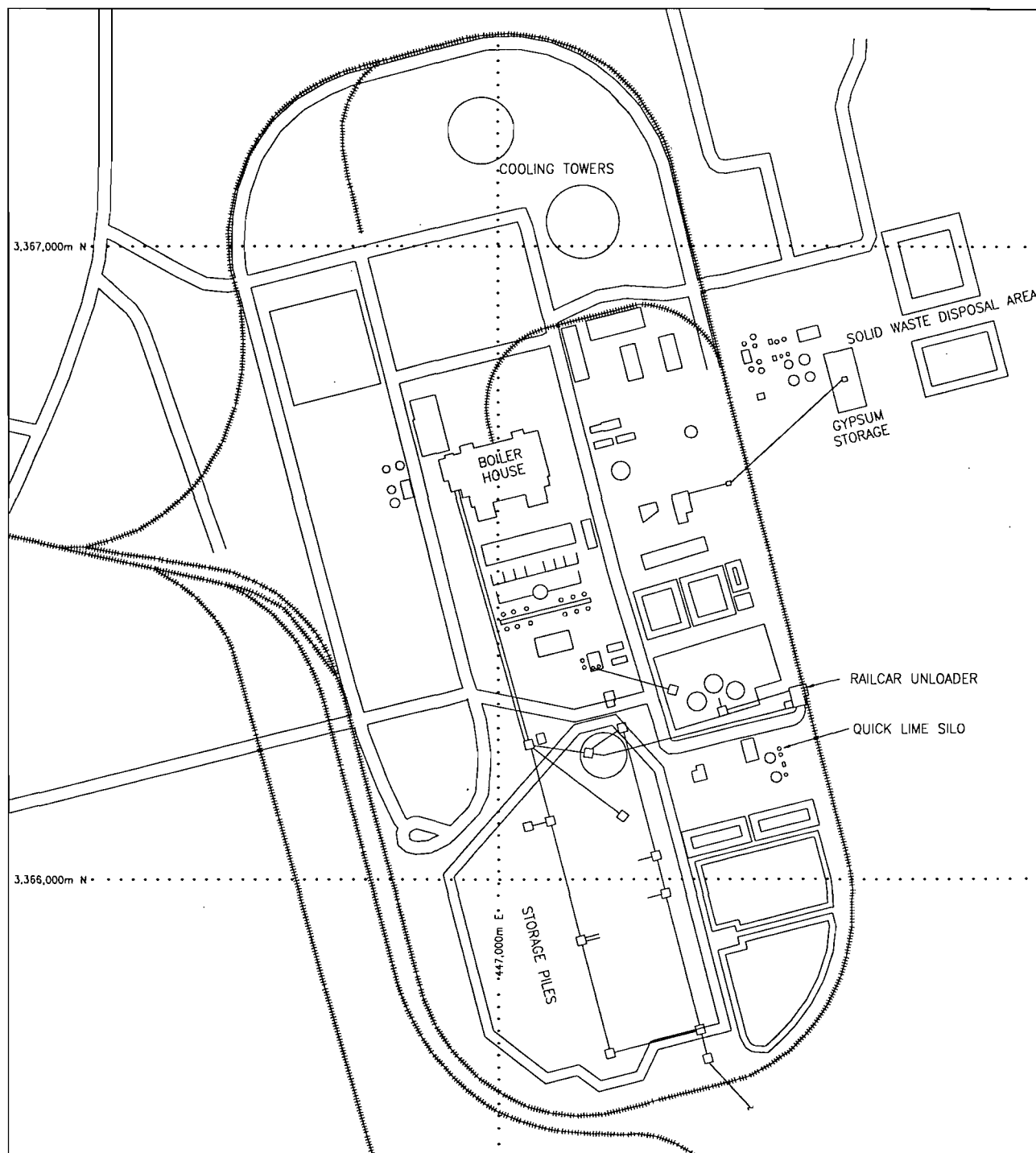
FOSTER WHEELER ENVIRONMENTAL CORPORATION

|                |                                 |                              |                                                   |
|----------------|---------------------------------|------------------------------|---------------------------------------------------|
| SCALE AS SHOWN | PREPARED<br>CHECKED<br>APPROVED | R.P.V.<br><i>[Signature]</i> | CAD FILE NO.<br>JEAAREA.DWG<br>FIGURE NO.<br>F-1A |
| DATE 4/24/99   |                                 |                              |                                                   |



**FACILITY SUPPLEMENTAL INFORMATION**  
**St Johns River Power Park**

**ATTACHMENT F-2**  
**Facility Plot Plan**



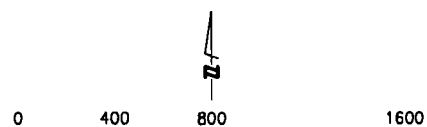
# NOTES

THE INFORMATION ON THIS DRAWING WAS NOT SURVEYED BY A PROFESSIONAL LAND SURVEYOR. LOCATIONS OF ITEMS SHOWN ARE CONSIDERED APPROXIMATE.

SEE FIGURE SRRPP01 FOR EMISSION UNIT LOCATIONS.

1000-METER UNIVERSAL TRANSVERSE MERCATOR GRID LINES, ZONE 17, 1927 NORTH AMERICAN DATUM (NAD 27) ARE SHOWN AS DOTTED LINES.

SOURCES: EBASCO SERVICES, INC. DRAWING JEA 3332 M-001600-01, REV 5, DATED 5-23-88  
MICRO MAP & CAD (USGS EASTPORT QUAD AND TROUT RIVER QUAD, 1:24,000 DLG DATA FILE, 1992;  
CONVERTED TO ACAD FILE, FEBRUARY 1998)



APPROXIMATE GRAPHIC SCALE IN FEET

## JEA ST. JOHNS RIVER POWER PARK PSD PERMIT UPDATE FACILITY PLOT PLAN

| FOSTER WHEELER ENVIRONMENTAL CORPORATION |          |        |              |
|------------------------------------------|----------|--------|--------------|
| SCALE AS SHOWN                           | PREPARED | R.PAV. | CAD FILE NO. |
| DATE 4/29/99                             | CHECKED  |        | SJRFPPM.DWG  |
|                                          | APPROVED |        | FIGURE NO.   |
|                                          |          |        | F-2          |



**FACILITY SUPPLEMENTAL INFORMATION**  
**St Johns River Power Park**

**ATTACHMENT F-3**  
**Reasonable Precautions for Unconfined Particulate Matter**  
**Fugitive Emissions Identification**  
**(As Described and As Listed on Figure SJRPP01)**

## **Precautions to Prevent Emissions of Unconfined Particulate Matter**

Unconfined particulate matter as a result of the operation of the facility is associated with the following activities:

- Materials Handling and Storage Operations (Coal, Petroleum Coke, Limestone, Flyash, and Bottom Ash;
- Sandblasting Activities;
- Surface Coating Activities; and
- Vehicle Activities

Several precautions have been implemented to prevent emissions of unconfined particulate matter from vehicle activities which include:

- Paving of roads, parking areas and equipment yards;
- Landscaping and planting of vegetation.

Emissions of unconfined particulate matter from materials handling and storage operations are controlled by various techniques and strategies which are identified on Figure SJRPP01. These techniques and strategies include the following:

- Conditioned Materials;
- Wet Suppression;
- Water Sprays ;
- Enclosures ;
- Dust Collection Systems; and
- Best Operating Practices

*Operational measures* are undertaken at the facility which also minimize particulate emissions, in accordance with 62-296.310 F.A.C.:

- Maintenance of paved areas as needed;
- Regular mowing of grass and care of vegetation;
- Limiting access to plant property by unnecessary vehicles;
- With the exception of bagged fertilizer, bagged chemical products are stored in weather-tight buildings until they are used. Spills of powdered chemical products are cleaned up immediately;
- A wetting agent is used to reduce fugitive PM emissions from the coal storage area.

During construction activities a combination of the following techniques will be implemented:

Contractors will be instructed to comply with any applicable state and local regulations governing open-bodied trucks hauling sand, gravel, or soil between on-site and off-site areas.

Areas disturbed during construction will be stabilized by mulching or seeding as soon as practicable.

When construction occurs on bare ground, water (possibly together with non-hazardous wetting agents) will be used as necessary to help suppress dust, as needed.

Temporary vehicular surfaces of crushed rock may be used in high traffic areas. Areas not subject to heavy traffic or continual disturbance will be wetted down as needed using nontoxic substances to help suppress dust.

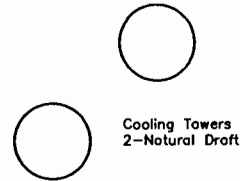
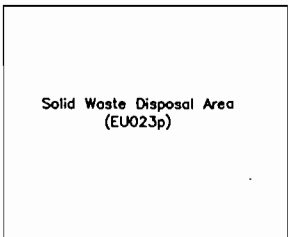
Sandblasting operations will be localized to minimize effects on adjacent work areas. Protective covers will also be utilized where practicable.

Surface coating activities will include the maintenance painting of the facilities. As with normal surface coating operations, activities will be enclosed whenever practical.

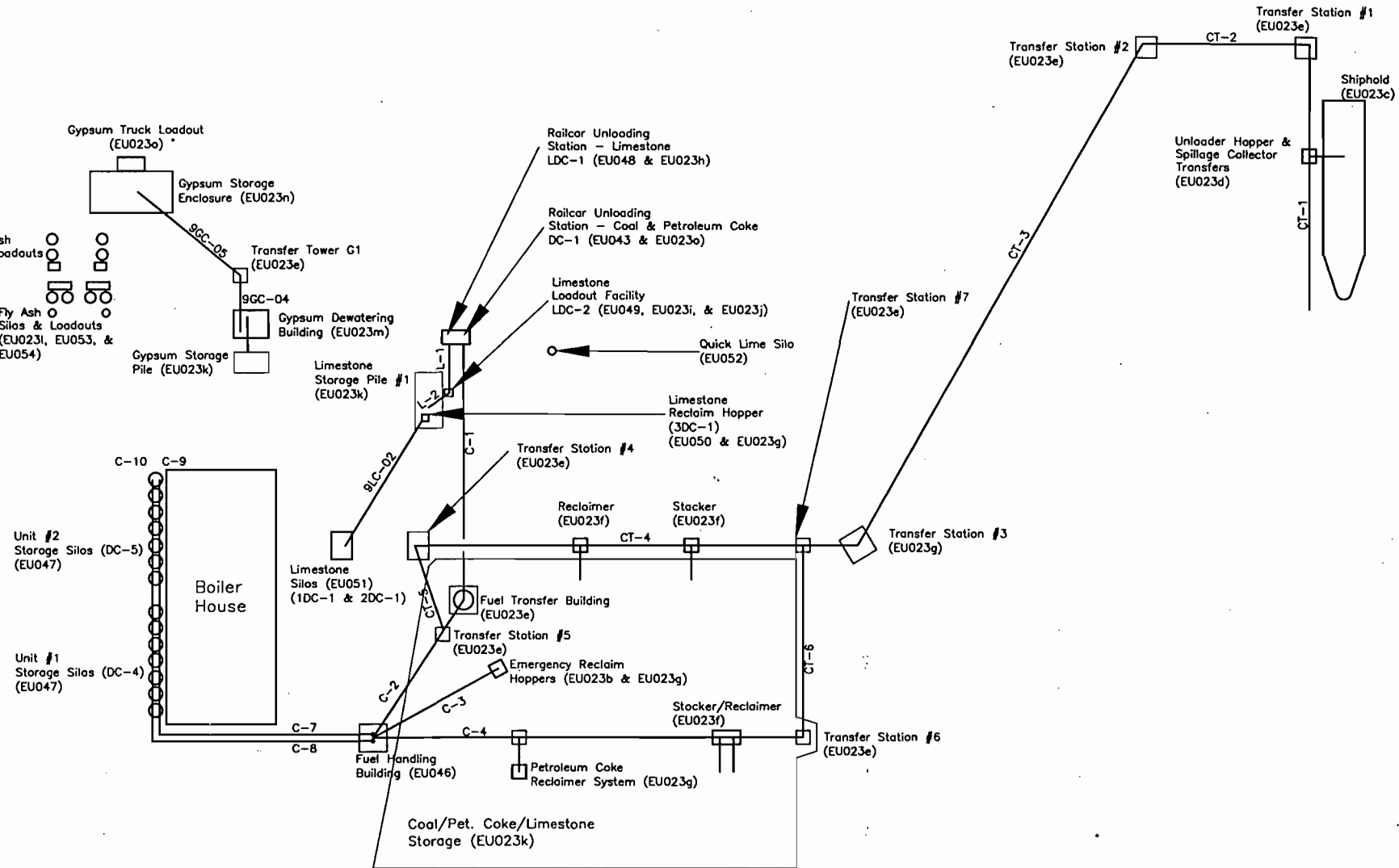
Figure SJRPP01

SJRPP  
Materials Handling & Storage Operations  
Layout Schematic - Not To Scale

| Fugitive Dust Sources                                     | EU ID# | AQCS         | Control Efficiency | PM10 (lb/hr) | PM10 (TPY) | Opacity (%) |
|-----------------------------------------------------------|--------|--------------|--------------------|--------------|------------|-------------|
| Shiphold                                                  | 023c   | 1, 4, & 6    | 70.00%             | 0.257        | 0.476      | 10%         |
| Unloader Hopper and Spillage Collector Transfers          | 023d   | 1, 3, 4, & 6 | 85.00%             | 0.130        | 0.240      | 10%         |
| Ship Unloader Hopper, Transfer to CT-1, Spillage Conveyor | 023d   | 1, 3, 4, & 6 | 85.00%             | 0.471        | 0.870      | 10%         |
| Transfer Station No. 1                                    | 023e   | 1, 2, & 4    | 98.00%             | 0.021        | 0.039      | 5%          |
| Transfer Station No. 2                                    | 023e   | 1, 2, & 4    | 98.00%             | 0.021        | 0.039      | 5%          |
| Transfer Station No. 3                                    | 023e   | 1, 2, & 4    | 98.00%             | 0.022        | 0.041      | 5%          |
| Transfer Station No. 4                                    | 023e   | 1 & 4        | 98.00%             | 0.021        | 0.036      | 5%          |
| Transfer Station No. 5                                    | 023e   | 1 & 4        | 98.00%             | 0.021        | 0.036      | 5%          |
| Transfer Station No. 6                                    | 023e   | 1 & 4        | 98.00%             | 0.021        | 0.027      | 5%          |
| Transfer Station No. 7                                    | 023e   | 1 & 4        | 98.00%             | 0.021        | 0.027      | 5%          |
| Fuel Transfer Building                                    | 023e   | 1, 3 & 4     | 85.00%             | 0.309        | 0.198      | 10%         |
| Stacker/Reclaimer (Stacker Mode)                          | 023f   | 1 & 3        | 82.67%             | 1.081        | 0.693      | 10%         |
| Stacker                                                   | 023f   | 1 & 3        | 82.67%             | 0.544        | 1.005      | 10%         |
| Reclaimer                                                 | 023f   | 1 & 3        | 89.67%             | 0.433        | 0.554      | 10%         |
| Petroleum Coke Reclaimer System                           | 023g   | 1            | 60.00%             | 0.324        | 1.420      | 10%         |
| Emergency Reclaim Hoppers - Loadout                       | 023g   | 1            | 75.00%             | 0.286        | 0.367      | 10%         |
| Limestone Railcar Dumper                                  | 023h   | 1, 2, 3, & 4 | 97.00%             | 0.005        | 0.004      | 10%         |
| Limestone Loadout                                         | 023i   | 1 & 3        | 97.00%             | 0.005        | 0.004      | 10%         |
| Limestone Truck Loadout & Transfer                        | 023j   | 1            | 75.00%             | 0.099        | 0.089      | 10%         |
| Limestone Storage Pile #1 - Existing                      | 023k   | 1 & 3        | 90.00%             | 0.255        | 0.018      | 10%         |
| Limestone Storage Pile #2 - Fuel Yard                     | 023k   | 1, 2 & 3     | 90.00%             | 0.118        | 0.008      | 10%         |
| Coal Pile                                                 | 023k   | 1, 2 & 3     | 90.00%             | 0.264        | 0.006      | 10%         |
| Petroleum Coke Pile                                       | 023k   | 1, 2 & 3     | 90.00%             | 0.711        | 0.042      | 10%         |
| Limestone Reclaim Hopper                                  | 023g   | 1            | 42.50%             | 0.137        | 0.137      | 10%         |
| Fly Ash loadouts 1A                                       | 023i   | 1 & 3        | 97.00%             | 0.028        | 0.125      | 10%         |
| Fly Ash loadouts 1B                                       | 023i   | 1 & 3        | 97.00%             | 0.028        | 0.125      | 10%         |
| Fly Ash loadouts 2A                                       | 023i   | 1 & 3        | 97.00%             | 0.028        | 0.125      | 10%         |
| Fly Ash loadouts 2B                                       | 023i   | 1 & 3        | 97.00%             | 0.028        | 0.125      | 10%         |
| Bottom Ash Loadouts 1A                                    | 023i   | 1            | 0.00%              | 0.042        | 0.184      | 10%         |
| Bottom Ash Loadouts 1B                                    | 023i   | 1            | 0.00%              | 0.042        | 0.184      | 10%         |
| Bottom Ash Loadouts 2A                                    | 023i   | 1            | 0.00%              | 0.042        | 0.184      | 10%         |
| Bottom Ash Loadouts 2B                                    | 023i   | 1            | 0.00%              | 0.042        | 0.184      | 10%         |
| Gypsum Dewatering Building                                | 023m   | 1            | 0.00%              | 0.020        | 0.022      | 5%          |
| Gypsum Storage Pile (Non-Commercial)                      | 023k   | 1            | 85.00%             | 0.074        | 0.004      | 5%          |
| Transfer Point 9GC-04 to 9GC-05                           | 023e   | 1            | 0.00%              | 0.003        | 0.015      | 5%          |
| Gypsum Storage Enclosure                                  | 023n   | 1            | 0.00%              | 0.004        | 0.016      | 5%          |
| Gypsum Truck Loadout                                      | 023o   | 1            | 0.00%              | 0.130        | 0.273      | 5%          |
| Solid Waste Disposal Area                                 | 023k   | 1 & 2        | 90.00%             | 0.307        | 0.016      | 10%         |
| Unpaved Road, By-Product Transport                        | 023p   | 1 & 2        | 75.00%             | 0.151        | 0.663      | 10%         |
| Point Sources                                             | EU ID# | AQCS         | Control Efficiency | PM10 (lb/hr) | PM10 (TPY) | Opacity (%) |
| Rotary Railcar Dumper, Fuel Transfer Points (DC-1)        | 043    | 1, 4, & 5    | 99.50%             | 0.0825       | 0.0529     | 5%          |
| Fuel Handling Building (DC-3)                             | 046    | 1, 4, & 5    | 99.50%             | 0.1122       | 0.0719     | 5%          |
| Unit #1 Fuel Storage Bins (DC-4)                          | 047    | 1, 4, & 5    | 99.50%             | 0.0083       | 0.0106     | 5%          |
| Unit #2 Fuel Storage Bins (DC-5)                          | 047    | 1, 4, & 5    | 99.50%             | 0.0083       | 0.0106     | 5%          |
| Railcar Unloader, Limestone Transfer Points (LDC-1)       | 048    | 1, 4, & 5    | 99.50%             | 0.0115       | 0.0017     | 5%          |
| Limestone Loadout Facility (LDC-2)                        | 049    | 1, 4, & 5    | 99.50%             | 0.0058       | 0.0004     | 5%          |
| Limestone Reclaim Hopper, Transfer Points (3DC-01)        | 050    | 1, 4, & 5    | 99.50%             | 0.0003       | 0.0003     | 5%          |
| Limestone Silo (1DC-01)                                   | 051    | 1, 4, & 5    | 99.50%             | 0.0003       | 0.0003     | 5%          |
| Limestone Silo (2DC-01)                                   | 051    | 1, 4, & 5    | 99.50%             | 0.0003       | 0.0003     | 5%          |
| Quick Lime Silo                                           | 052    | 4 & 5        | 99.50%             | 0.0225       | 0.0986     | 5%          |
| Non-Saleable Ash Silo U#1-A                               | 053    | 4 & 5        | 99.50%             | 0.0169       | 0.0739     | 5%          |
| Non-Saleable Ash Silo U#2-A                               | 053    | 4 & 5        | 99.50%             | 0.0169       | 0.0739     | 5%          |
| Saleable Ash Silo 1A                                      | 054    | 4 & 5        | 99.50%             | 0.0338       | 0.1478     | 5%          |
| Saleable Ash Silo 1B                                      | 054    | 4 & 5        | 99.50%             | 0.0338       | 0.1478     | 5%          |
| Saleable Ash Silo 2A                                      | 054    | 4 & 5        | 99.50%             | 0.0338       | 0.1478     | 5%          |
| Saleable Ash Silo 2B                                      | 054    | 4 & 5        | 99.50%             | 0.0338       | 0.1478     | 5%          |
| Railcar Rotary Dumper - Building Emissions                | 023a   | 4 & 5        | 97.00%             | 0.0686       | 0.0440     | 10%         |
| Conveyor C-3 Tunnel Ventilation - 6,400 cfm               | 023b   | 4 & 5        | 98.00%             | 0.0153       | 0.0197     | 5%          |
| Conveyor C-3 Tunnel Ventilation - 6,400 cfm               | 023b   | 1, 3, & 4    | 98.00%             | 0.0153       | 0.0197     | 5%          |
| Conveyor C-3 Tunnel Ventilation - 21,600 cfm              | 023b   | 1 & 4        | 98.00%             | 0.0518       | 0.0664     | 5%          |



| Air Quality Control Systems (AQCS)                     |
|--------------------------------------------------------|
| 1. Conditioned Materials                               |
| 2. Wet Suppression                                     |
| 3. Water Sprays                                        |
| 4. Enclosures (Total, Partial, Covers, & Wind Screens) |
| 5. Dust Collection Systems                             |
| 6. Best Operating Practices                            |



JEA  
ST JOHNS RIVER POWER PARK  
PSD PERMIT UPDATE  
Materials Handling and Storage Operations  
Equipment Layout

FOSTER WHEELER ENVIRONMENTAL CORPORATION

SCALE N/A  
DATE: 04/29/99

PREPARED  
CHECKED  
APPROVED

DJG  
MAE  
DJG

CAD FILE NO.  
PPOA.DWG  
FIGURE NO.  
SJRPP01

**FACILITY SUPPLEMENTAL INFORMATION**  
**St Johns River Power Park**

**ATTACHMENT F-4**  
**Construction Permit Application - Supplemental Information**

**CONSTRUCTION PERMIT APPLICATION - SUPPLEMENTAL  
INFORMATION**

**ATTACHMENT F-4a  
Electronic Files - ELSA**

**CONSTRUCTION PERMIT APPLICATION - SUPPLEMENTAL  
INFORMATION**

**ATTACHMENT F-4b  
AP42- Emission Factors & References**

## 11.12 Concrete Batching

### 11.12.1 Process Description<sup>1-4</sup>

Concrete is composed essentially of water, cement, sand (fine aggregate), and coarse aggregate. Coarse aggregate may consist of gravel, crushed stone, or iron blast furnace slag. Some specialty aggregate products could be either heavyweight aggregate (of barite, magnetite, limonite, ilmenite, iron, or steel) or lightweight aggregate (with sintered clay, shale, slate, diatomaceous shale, perlite, vermiculite, slag, pumice, cinders, or sintered fly ash). Concrete batching plants store, convey, measure, and discharge these constituents into trucks for transport to a job site. In some cases, concrete is prepared at a building construction site or for the manufacture of concrete products such as pipes and prefabricated construction parts. Figure 11.12-1 is a generalized process diagram for concrete batching.

The raw materials can be delivered to a plant by rail, truck, or barge. The cement is transferred to elevated storage silos pneumatically or by bucket elevator. The sand and coarse aggregate are transferred to elevated bins by front end loader, clam shell crane, belt conveyor, or bucket elevator. From these elevated bins, the constituents are fed by gravity or screw conveyor to weigh hoppers, which combine the proper amounts of each material.

Truck mixed (transit mixed) concrete involves approximately 75 percent of U. S. concrete batching plants. At these plants, sand, aggregate, cement, and water are all gravity fed from the weigh hopper into the mixer trucks. The concrete is mixed on the way to the site where the concrete is to be poured. Central mix facilities (including shrink mixed) constitute the other one-fourth of the industry. With these, concrete is mixed and then transferred to either an open bed dump truck or an agitator truck for transport to the job site. Shrink mixed concrete is concrete that is partially mixed at the central mix plant and then completely mixed in a truck mixer on the way to the job site. Dry batching, with concrete mixed and hauled to the construction site in dry form, is seldom, if ever, used.

### 11.12.2 Emissions And Controls<sup>5-7</sup>

Emission factors for concrete batching are given in Tables 11.12-1 and 11.12-2, with potential air pollutant emission points shown. Particulate matter, consisting primarily of cement dust but including some aggregate and sand dust emissions, is the only pollutant of concern. All but one of the emission points are fugitive in nature. The only point source is the transfer of cement to the silo, and this is usually vented to a fabric filter or "sock". Fugitive sources include the transfer of sand and aggregate, truck loading, mixer loading, vehicle traffic, and wind erosion from sand and aggregate storage piles. The amount of fugitive emissions generated during the transfer of sand and aggregate depends primarily on the surface moisture content of these materials. The extent of fugitive emission control varies widely from plant to plant.

Types of controls used may include water sprays, enclosures, hoods, curtains, shrouds, movable and telescoping chutes, and the like. A major source of potential emissions, the movement of heavy trucks over unpaved or dusty surfaces in and around the plant, can be controlled by good maintenance and wetting of the road surface.



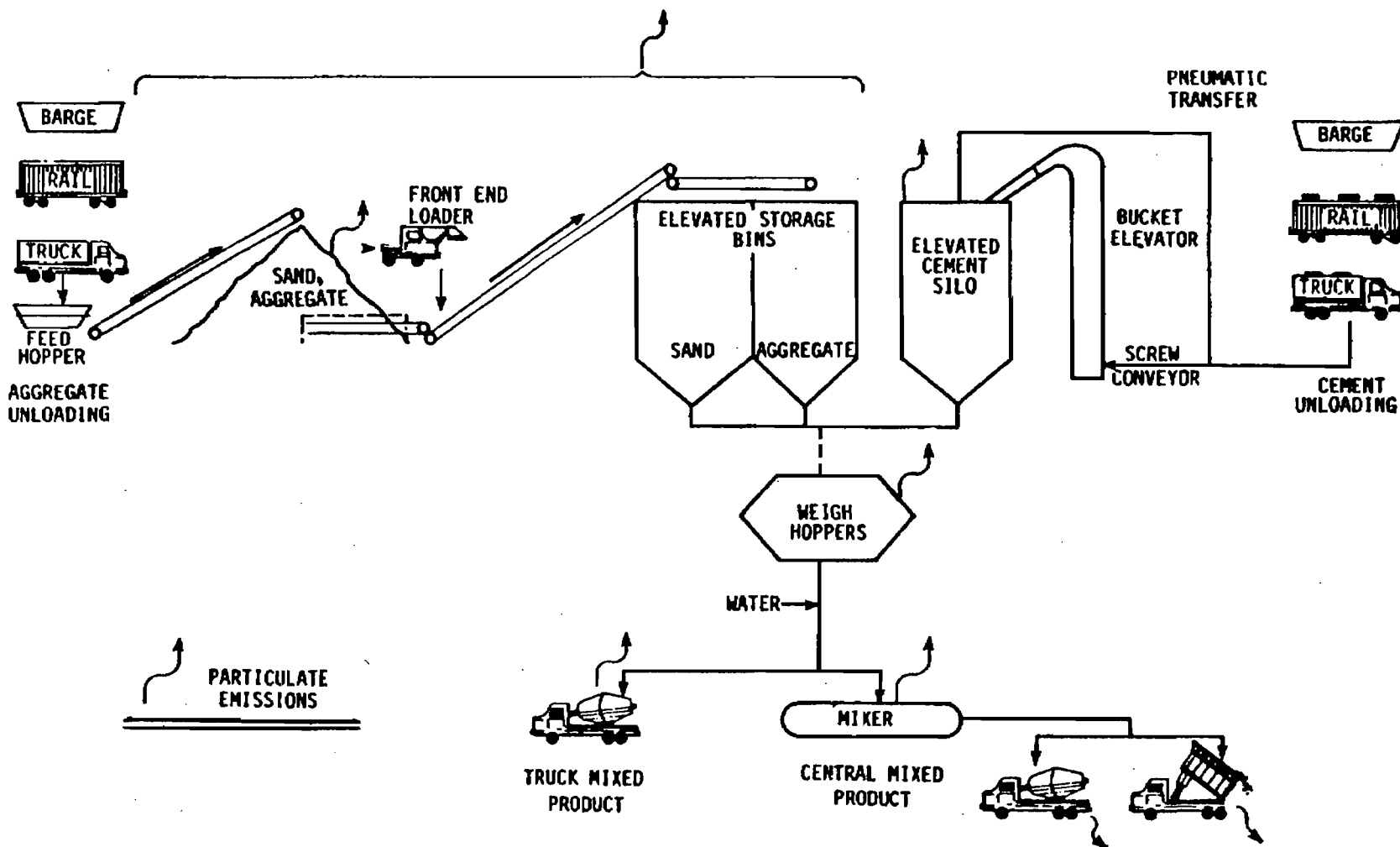


Figure 11.12-1. Typical concrete batching process.

Table 11.12-1 (Metric Units). EMISSION FACTORS FOR CONCRETE BATCHING<sup>a</sup>

| Source (SCC)                                                                  | Filterable <sup>b</sup> |        |       | Condensable PM <sup>c</sup> |         |
|-------------------------------------------------------------------------------|-------------------------|--------|-------|-----------------------------|---------|
|                                                                               | PM                      | RATING | PM-10 | Inorganic                   | Organic |
| Sand and aggregate transfer to elevated bin (3-05-011-06) <sup>d</sup>        | 0.014                   | E      | ND    | ND                          | ND      |
| Cement unloading to elevated storage silo                                     |                         |        |       |                             |         |
| Pneumatic <sup>e</sup>                                                        | 0.13                    | D      | ND    | ND                          | ND      |
| Bucket elevator (3-05-011-07) <sup>f</sup>                                    | 0.12                    | E      | ND    | ND                          | ND      |
| Weigh hopper loading (3-05-011-8) <sup>g</sup>                                | 0.01                    | E      | ND    | ND                          | ND      |
| Mixer loading (central mix) (3-05-011-09) <sup>g</sup>                        | 0.02                    | E      | ND    | ND                          | ND      |
| Truck loading (truck mix) (3-05-011-10) <sup>g</sup>                          | 0.01                    | E      | ND    | ND                          | ND      |
| Vehicle traffic (unpaved roads) (3-05-011-__) <sup>h</sup>                    | 4.5                     | C      | ND    | ND                          | ND      |
| Wind erosion from sand and aggregate storage piles (3-05-011-__) <sup>i</sup> | 3.9                     | D      | ND    | ND                          | ND      |
| Total process emissions (truck mix)(3-05-011-__) <sup>j</sup>                 | 0.05                    | E      | ND    | ND                          | ND      |

<sup>a</sup> Factors represent uncontrolled emissions unless otherwise noted. All emission factors are in kg/Mg of material mixed unless noted. Based on a typical yd<sup>3</sup> weighing 1,818 kg (4,000 lb) and containing 227 kg (500 lb) cement, 564 kg (1,240 lb) sand, 864 kg (1,900 lb) coarse aggregate, and 164 kg (360 lb) water. SCC = Source Classification Code. ND = no data.

<sup>b</sup> Filterable PM is that PM collected on or prior to the filter of an EPA Method 5 (or equivalent) sampling train.

<sup>c</sup> Condensable PM is that PM collected in the impinger portion of a PM sampling train.

<sup>d</sup> Reference 6.

<sup>e</sup> For uncontrolled emissions measured before filter. Based on 2 tests on pneumatic conveying controlled by a fabric filter.

<sup>f</sup> Reference 7. From test of mechanical unloading to hopper and subsequent transport of cement by enclosed bucket elevator to elevated bins with fabric socks over bin vent.

<sup>g</sup> Reference 5. Engineering judgment, based on observations and emissions tests of similar controlled sources.

<sup>h</sup> From Section 13.2-1, with k = 0.8, s = 12, S = 20, W = 20, w = 14, and p = 100; units of kg/vehicle kilometers traveled; based on facility producing 23,100 m<sup>3</sup>/yr (30,000 yd<sup>3</sup>/yr) of concrete, with average truck load of 6.2 m<sup>3</sup> (8 yd<sup>3</sup>) and plant road length of 161 meters (0.1 mile).

<sup>i</sup> From Section 11.19-1, for emissions <30 micrometers from inactive storage piles; units of kg/hectare/day.

<sup>j</sup> Based on pneumatic conveying of cement at a truck mix facility. Does not include vehicle traffic or wind erosion from storage piles.

Table 11.12-2 (English Units). EMISSION FACTORS FOR CONCRETE BATCHING<sup>a,b</sup>

| Source (SCC)                                                                   | Filterable <sup>c</sup>                |        |       | Condensable PM <sup>d</sup> |         |
|--------------------------------------------------------------------------------|----------------------------------------|--------|-------|-----------------------------|---------|
|                                                                                | PM                                     | RATING | PM-10 | Inorganic                   | Organic |
| Sand and aggregate transfer to elevated bin (3-05-011-06) <sup>e</sup>         | 0.029<br>(0.05)                        | E      | ND    | ND                          | ND      |
| Cement unloading to elevated storage silo<br>Pneumatic <sup>f</sup>            | 0.27<br>(0.07)                         | D      | ND    | ND                          | ND      |
| Bucket elevator (3-05-011-07) <sup>g</sup>                                     | 0.24<br>(0.06)                         | E      | ND    | ND                          | ND      |
| Weigh hopper loading (3-05-011-08) <sup>h</sup>                                | 0.02<br>(0.04)                         | E      | ND    | ND                          | ND      |
| Mixer loading (central mix) (3-05-011-09) <sup>h</sup>                         | 0.04<br>(0.07)                         | E      | ND    | ND                          | ND      |
| Truck loading (truck mix) (3-05-011-10) <sup>h</sup>                           | 0.02<br>(0.04)                         | E      | ND    | ND                          | ND      |
| Vehicle traffic (unpaved roads) (3-05-011-___) <sup>j</sup>                    | 16<br>(0.02)                           | C      | ND    | ND                          | ND      |
| Wind erosion from sand and aggregate storage piles (3-05-011-___) <sup>j</sup> | 3.5 <sup>k</sup><br>(0.1) <sup>l</sup> | D      | ND    | ND                          | ND      |
| Total process emissions (truck mix) (3-05-011-___) <sup>m</sup>                | 0.1<br>(0.2)                           | E      | ND    | ND                          | ND      |

<sup>a</sup> Factors represent uncontrolled emissions unless otherwise noted. All emission factors are in lb/ton (lb/yd<sup>3</sup>) of material mixed unless noted. SCC = Source Classification Code. ND = no data.

<sup>b</sup> Based on a typical yd<sup>3</sup> weighing 1,818 kg (4,000 lb) and containing 227 kg (500 lb) cement, 564 kg (1,240 lb) sand, 864 kg (1,900 lb) coarse aggregate, and 164 kg (360 lb) water.

<sup>c</sup> Filterable PM is that PM collected on or prior to the filter of an EPA Method 5 (or equivalent) sampling train.

<sup>d</sup> Condensable PM is that PM collected in the impinger portion of a PM sampling train.

<sup>e</sup> Reference 6.

<sup>f</sup> For uncontrolled emissions measured before filter. Based on 2 tests on pneumatic conveying controlled by a fabric filter.

<sup>g</sup> Reference 7. From test of mechanical unloading to hopper and subsequent transport of cement by enclosed bucket elevator to elevated bins with fabric socks over bin vent.

<sup>h</sup> Reference 5. Engineering judgment, based on observations and emission tests of similar controlled sources.

<sup>i</sup> From Section 13.2.1, with  $k = 0.8$ ,  $s = 12$ ,  $S = 20$ ,  $W = 20$ ,  $w = 14$ , and  $p = 100$ ; units of lb/vehicle miles traveled; based on facility producing 23,100 m<sup>3</sup>/yr (30,000 yd<sup>3</sup>/yr) of concrete, with average truck load of 6.2 m<sup>3</sup> (8 yd<sup>3</sup>) and plant road length of 161 meters (0.1 mile).

<sup>j</sup> From Section 11.19.1, for emissions <30 micrometers from inactive storage piles.

<sup>k</sup> Units of lb/acre/day.

<sup>l</sup> Assumes 1,011 m<sup>2</sup> (1/4 acre) of sand and aggregate storage at plant with production of 23,000 m<sup>3</sup>/yr (30,000 yd<sup>3</sup>/yr).

<sup>m</sup> Based on pneumatic conveying of cement at a truck mix facility; does not include vehicle traffic or wind erosion from storage piles.

Predictive equations that allow for emission factor adjustment based on plant-specific conditions are given in Chapter 13. Whenever plant specific data are available, they should be used in lieu of the fugitive emission factors presented in Table 11.12-1.

#### References For Section 11.12

1. *Air Pollutant Emission Factors*, APTD-0923, U. S. Environmental Protection Agency, Research Triangle Park, NC, April 1970.
2. *Air Pollution Engineering Manual*, 2nd Edition, AP-40, U. S. Environmental Protection Agency, Research Triangle Park, NC, 1974. Out of Print.
3. Telephone and written communication between Edwin A. Pfetzing, PEDCo Environmental, Inc., Cincinnati, OH, and Richard Morris and Richard Meininger, National Ready Mix Concrete Association, Silver Spring, MD, May 1984.
4. *Development Document For Effluent Limitations Guidelines And Standards Of Performance, The Concrete Products Industries, Draft*, U. S. Environmental Protection Agency, Washington, DC, August 1975.
5. *Technical Guidance For Control Of Industrial Process Fugitive Particulate Emissions*, EPA-450/3-77-010, U. S. Environmental Protection Agency, Research Triangle Park, NC, March 1977.
6. *Fugitive Dust Assessment At Rock And Sand Facilities In The South Coast Air Basin*, Southern California Rock Products Association and Southern California Ready Mix Concrete Association, Santa Monica, CA, November 1979.
7. Telephone communication between T. R. Blackwood, Monsanto Research Corp., Dayton, OH, and John Zoller, PEDCo Environmental, Inc., Cincinnati, OH, October 18, 1976.

## 13.2.4 Aggregate Handling And Storage Piles

### 13.2.4.1 General

Inherent in operations that use minerals in aggregate form is the maintenance of outdoor storage piles. Storage piles are usually left uncovered, partially because of the need for frequent material transfer into or out of storage.

Dust emissions occur at several points in the storage cycle, such as material loading onto the pile, disturbances by strong wind currents, and loadout from the pile. The movement of trucks and loading equipment in the storage pile area is also a substantial source of dust.

### 13.2.4.2 Emissions And Correction Parameters

The quantity of dust emissions from aggregate storage operations varies with the volume of aggregate passing through the storage cycle. Emissions also depend on 3 parameters of the condition of a particular storage pile: age of the pile, moisture content, and proportion of aggregate fines.

When freshly processed aggregate is loaded onto a storage pile, the potential for dust emissions is at a maximum. Fines are easily disaggregated and released to the atmosphere upon exposure to air currents, either from aggregate transfer itself or from high winds. As the aggregate pile weathers, however, potential for dust emissions is greatly reduced. Moisture causes aggregation and cementation of fines to the surfaces of larger particles. Any significant rainfall soaks the interior of the pile, and then the drying process is very slow.

Silt (particles equal to or less than 75 micrometers [ $\mu\text{m}$ ] in diameter) content is determined by measuring the portion of dry aggregate material that passes through a 200-mesh screen, using ASTM-C-136 method.<sup>1</sup> Table 13.2.4-1 summarizes measured silt and moisture values for industrial aggregate materials.

### 13.2.4.3 Predictive Emission Factor Equations

Total dust emissions from aggregate storage piles result from several distinct source activities within the storage cycle:

1. Loading of aggregate onto storage piles (batch or continuous drop operations).
2. Equipment traffic in storage area.
3. Wind erosion of pile surfaces and ground areas around piles.
4. Loadout of aggregate for shipment or for return to the process stream (batch or continuous drop operations).

Either adding aggregate material to a storage pile or removing it usually involves dropping the material onto a receiving surface. Truck dumping on the pile or loading out from the pile to a truck with a front-end loader are examples of batch drop operations. Adding material to the pile by a conveyor stacker is an example of a continuous drop operation.

Table 13.2.4-1. TYPICAL SILT AND MOISTURE CONTENTS OF MATERIALS AT VARIOUS INDUSTRIES<sup>a</sup>

| Industry                        | No. Of Facilities | Material                   | Silt Content (%) |           |      | Moisture Content (%) |            |      |
|---------------------------------|-------------------|----------------------------|------------------|-----------|------|----------------------|------------|------|
|                                 |                   |                            | No. Of Samples   | Range     | Mean | No. Of Samples       | Range      | Mean |
| Iron and steel production       | 9                 | Pellet ore                 | 13               | 1.3 - 13  | 4.3  | 11                   | 0.64 - 4.0 | 2.2  |
|                                 |                   | Lump ore                   | 9                | 2.8 - 19  | 9.5  | 6                    | 1.6 - 8.0  | 5.4  |
|                                 |                   | Coal                       | 12               | 2.0 - 7.7 | 4.6  | 11                   | 2.8 - 11   | 4.8  |
|                                 |                   | Slag                       | 3                | 3.0 - 7.3 | 5.3  | 3                    | 0.25 - 2.0 | 0.92 |
|                                 |                   | Flue dust                  | 3                | 2.7 - 23  | 13   | 1                    | —          | 7    |
|                                 |                   | Coke breeze                | 2                | 4.4 - 5.4 | 4.9  | 2                    | 6.4 - 9.2  | 7.8  |
|                                 |                   | Blended ore                | 1                | —         | 15   | 1                    | —          | 6.6  |
|                                 |                   | Sinter                     | 1                | —         | 0.7  | 0                    | —          | —    |
|                                 |                   | Limestone                  | 3                | 0.4 - 2.3 | 1.0  | 2                    | ND         | 0.2  |
| Stone quarrying and processing  | 2                 | Crushed limestone          | 2                | 1.3 - 1.9 | 1.6  | 2                    | 0.3 - 1.1  | 0.7  |
|                                 |                   | Various limestone products | 8                | 0.8 - 14  | 3.9  | 8                    | 0.46 - 5.0 | 2.1  |
| Taconite mining and processing  | 1                 | Pellets                    | 9                | 2.2 - 5.4 | 3.4  | 7                    | 0.05 - 2.0 | 0.9  |
|                                 |                   | Tailings                   | 2                | ND        | 11   | 1                    | —          | 0.4  |
| Western surface coal mining     | 4                 | Coal                       | 15               | 3.4 - 16  | 6.2  | 7                    | 2.8 - 20   | 6.9  |
|                                 |                   | Overburden                 | 15               | 3.8 - 15  | 7.5  | 0                    | —          | —    |
|                                 |                   | Exposed ground             | 3                | 5.1 - 21  | 15   | 3                    | 0.8 - 6.4  | 3.4  |
| Coal-fired power plant          | 1                 | Coal (as received)         | 60               | 0.6 - 4.8 | 2.2  | 59                   | 2.7 - 7.4  | 4.5  |
| Municipal solid waste landfills | 4                 | Sand                       | 1                | —         | 2.6  | 1                    | —          | 7.4  |
|                                 |                   | Slag                       | 2                | 3.0 - 4.7 | 3.8  | 2                    | 2.3 - 4.9  | 3.6  |
|                                 |                   | Cover                      | 5                | 5.0 - 16  | 9.0  | 5                    | 8.9 - 16   | 12   |
|                                 |                   | Clay/dirt mix              | 1                | —         | 9.2  | 1                    | —          | 14   |
|                                 |                   | Clay                       | 2                | 4.5 - 7.4 | 6.0  | 2                    | 8.9 - 11   | 10   |
|                                 |                   | Fly ash                    | 4                | 78 - 81   | 80   | 4                    | 26 - 29    | 27   |
|                                 |                   | Misc. fill materials       | 1                | —         | 12   | 1                    | —          | 11   |

<sup>a</sup> References 1-10. ND = no data.

The quantity of particulate emissions generated by either type of drop operation, per kilogram (kg) (ton) of material transferred, may be estimated, with a rating of A, using the following empirical expression:<sup>11</sup>

$$E = k(0.0016) \frac{\left(\frac{U}{2.2}\right)^{1.3}}{\left(\frac{M}{2}\right)^{1.4}} \text{ (kg/megagram [Mg])} \quad (1)$$

$$E = k(0.0032) \frac{\left(\frac{U}{5}\right)^{1.3}}{\left(\frac{M}{2}\right)^{1.4}} \text{ (pound [lb]/ton)}$$

where:

E = emission factor

k = particle size multiplier (dimensionless)

U = mean wind speed, meters per second (m/s) (miles per hour [mph])

M = material moisture content (%)

The particle size multiplier in the equation, k, varies with aerodynamic particle size range, as follows:

| Aerodynamic Particle Size Multiplier (k) For Equation 1 |         |         |        |          |
|---------------------------------------------------------|---------|---------|--------|----------|
| < 30 µm                                                 | < 15 µm | < 10 µm | < 5 µm | < 2.5 µm |
| 0.74                                                    | 0.48    | 0.35    | 0.20   | 0.11     |

The equation retains the assigned quality rating if applied within the ranges of source conditions that were tested in developing the equation, as follows. Note that silt content is included, even though silt content does not appear as a correction parameter in the equation. While it is reasonable to expect that silt content and emission factors are interrelated, no significant correlation between the 2 was found during the derivation of the equation, probably because most tests with high silt contents were conducted under lower winds, and vice versa. It is recommended that estimates from the equation be reduced 1 quality rating level if the silt content used in a particular application falls outside the range given:

| Ranges Of Source Conditions For Equation 1 |                         |            |          |
|--------------------------------------------|-------------------------|------------|----------|
| Silt Content<br>(%)                        | Moisture Content<br>(%) | Wind Speed |          |
|                                            |                         | m/s        | mph      |
| 0.44 - 19                                  | 0.25 - 4.8              | 0.6 - 6.7  | 1.3 - 15 |

To retain the quality rating of the equation when it is applied to a specific facility, reliable correction parameters must be determined for specific sources of interest. The field and laboratory procedures for aggregate sampling are given in Reference 3. In the event that site-specific values for correction parameters cannot be obtained, the appropriate mean from Table 13.2.4-1 may be used, but the quality rating of the equation is reduced by 1 letter.

For emissions from equipment traffic (trucks, front-end loaders, dozers, etc.) traveling between or on piles, it is recommended that the equations for vehicle traffic on unpaved surfaces be used (see Section 13.2.2). For vehicle travel between storage piles, the silt value(s) for the areas among the piles (which may differ from the silt values for the stored materials) should be used.

Worst-case emissions from storage pile areas occur under dry, windy conditions. Worst-case emissions from materials-handling operations may be calculated by substituting into the equation appropriate values for aggregate material moisture content and for anticipated wind speeds during the worst case averaging period, usually 24 hours. The treatment of dry conditions for Section 13.2.2, vehicle traffic, "Unpaved Roads", follows the methodology described in that section centering on parameter p. A separate set of nonclimatic correction parameters and source extent values corresponding to higher than normal storage pile activity also may be justified for the worst-case averaging period.

#### 13.2.4.4 Controls<sup>12-13</sup>

Watering and the use of chemical wetting agents are the principal means for control of aggregate storage pile emissions. Enclosure or covering of inactive piles to reduce wind erosion can also reduce emissions. Watering is useful mainly to reduce emissions from vehicle traffic in the storage pile area. Watering of the storage piles themselves typically has only a very temporary slight effect on total emissions. A much more effective technique is to apply chemical agents (such as surfactants) that permit more extensive wetting. Continuous chemical treating of material loaded onto piles, coupled with watering or treatment of roadways, can reduce total particulate emissions from aggregate storage operations by up to 90 percent.<sup>12</sup>

#### References For Section 13.2.4

1. C. Cowherd, Jr., *et al.*, *Development Of Emission Factors For Fugitive Dust Sources*, EPA-450/3-74-037, U. S. Environmental Protection Agency, Research Triangle Park, NC, June 1974.
2. R. Bohn, *et al.*, *Fugitive Emissions From Integrated Iron And Steel Plants*, EPA-600/2-78-050, U. S. Environmental Protection Agency, Cincinnati, OH, March 1978.
3. C. Cowherd, Jr., *et al.*, *Iron And Steel Plant Open Dust Source Fugitive Emission Evaluation*, EPA-600/2-79-103, U. S. Environmental Protection Agency, Cincinnati, OH, May 1979.
4. *Evaluation Of Open Dust Sources In The Vicinity Of Buffalo, New York*, EPA Contract No. 68-02-2545, Midwest Research Institute, Kansas City, MO, March 1979.
5. C. Cowherd, Jr., and T. Cuscino, Jr., *Fugitive Emissions Evaluation*, MRI-4343-L, Midwest Research Institute, Kansas City, MO, February 1977.



6. T. Cuscino, Jr., *et al.*, *Taconite Mining Fugitive Emissions Study*, Minnesota Pollution Control Agency, Roseville, MN, June 1979.
7. *Improved Emission Factors For Fugitive Dust From Western Surface Coal Mining Sources*, 2 Volumes, EPA Contract No. 68-03-2924, PEDCo Environmental, Kansas City, MO, and Midwest Research Institute, Kansas City, MO, July 1981.
8. *Determination Of Fugitive Coal Dust Emissions From Rotary Railcar Dumping*, TRC, Hartford, CT, May 1984.
9. *PM-10 Emission Inventory Of Landfills In the Lake Calumet Area*, EPA Contract No. 68-02-3891, Midwest Research Institute, Kansas City, MO, September 1987.
10. *Chicago Area Particulate Matter Emission Inventory — Sampling And Analysis*, EPA Contract No. 68-02-4395, Midwest Research Institute, Kansas City, MO, May 1988.
11. *Update Of Fugitive Dust Emission Factors In AP-42 Section 11.2*, EPA Contract No. 68-02-3891, Midwest Research Institute, Kansas City, MO, July 1987.
12. G. A. Jutze, *et al.*, *Investigation Of Fugitive Dust Sources Emissions And Control*, EPA-450/3-74-036a, U. S. Environmental Protection Agency, Research Triangle Park, NC, June 1974.
13. C. Cowherd, Jr., *et al.*, *Control Of Open Fugitive Dust Sources*, EPA-450/3-88-008, U. S. Environmental Protection Agency, Research Triangle Park, NC, September 1988.

### 13.2.5 Industrial Wind Erosion

#### 13.2.5.1 General<sup>1-3</sup>

Dust emissions may be generated by wind erosion of open aggregate storage piles and exposed areas within an industrial facility. These sources typically are characterized by nonhomogeneous surfaces impregnated with nonerodible elements (particles larger than approximately 1 centimeter [cm] in diameter). Field testing of coal piles and other exposed materials using a portable wind tunnel has shown that (a) threshold wind speeds exceed 5 meters per second (m/s) (11 miles per hour [mph]) at 15 cm above the surface or 10 m/s (22 mph) at 7 m above the surface, and (b) particulate emission rates tend to decay rapidly (half-life of a few minutes) during an erosion event. In other words, these aggregate material surfaces are characterized by finite availability of erodible material (mass/area) referred to as the erosion potential. Any natural crusting of the surface binds the erodible material, thereby reducing the erosion potential.

#### 13.2.5.2 Emissions And Correction Parameters

If typical values for threshold wind speed at 15 cm are corrected to typical wind sensor height (7 - 10 m), the resulting values exceed the upper extremes of hourly mean wind speeds observed in most areas of the country. In other words, mean atmospheric wind speeds are not sufficient to sustain wind erosion from flat surfaces of the type tested. However, wind gusts may quickly deplete a substantial portion of the erosion potential. Because erosion potential has been found to increase rapidly with increasing wind speed, estimated emissions should be related to the gusts of highest magnitude.

The routinely measured meteorological variable that best reflects the magnitude of wind gusts is the fastest mile. This quantity represents the wind speed corresponding to the whole mile of wind movement that has passed by the 1 mile contact anemometer in the least amount of time. Daily measurements of the fastest mile are presented in the monthly Local Climatological Data (LCD) summaries. The duration of the fastest mile, typically about 2 minutes (for a fastest mile of 30 mph), matches well with the half-life of the erosion process, which ranges between 1 and 4 minutes. It should be noted, however, that peak winds can significantly exceed the daily fastest mile.

The wind speed profile in the surface boundary layer is found to follow a logarithmic distribution:

$$u(z) = \frac{u^*}{0.4} \ln \frac{z}{z_0} \quad (z > z_0) \quad (1)$$

where:

- $u$  = wind speed, cm/s
- $u^*$  = friction velocity, cm/s
- $z$  = height above test surface, cm
- $z_0$  = roughness height, cm
- 0.4 = von Karman's constant, dimensionless

The friction velocity ( $u^*$ ) is a measure of wind shear stress on the erodible surface, as determined from the slope of the logarithmic velocity profile. The roughness height ( $z_0$ ) is a measure of the roughness of the exposed surface as determined from the y intercept of the velocity profile, i. e., the height at which the wind speed is zero. These parameters are illustrated in Figure 13.2.5-1 for a roughness height of 0.1 cm.

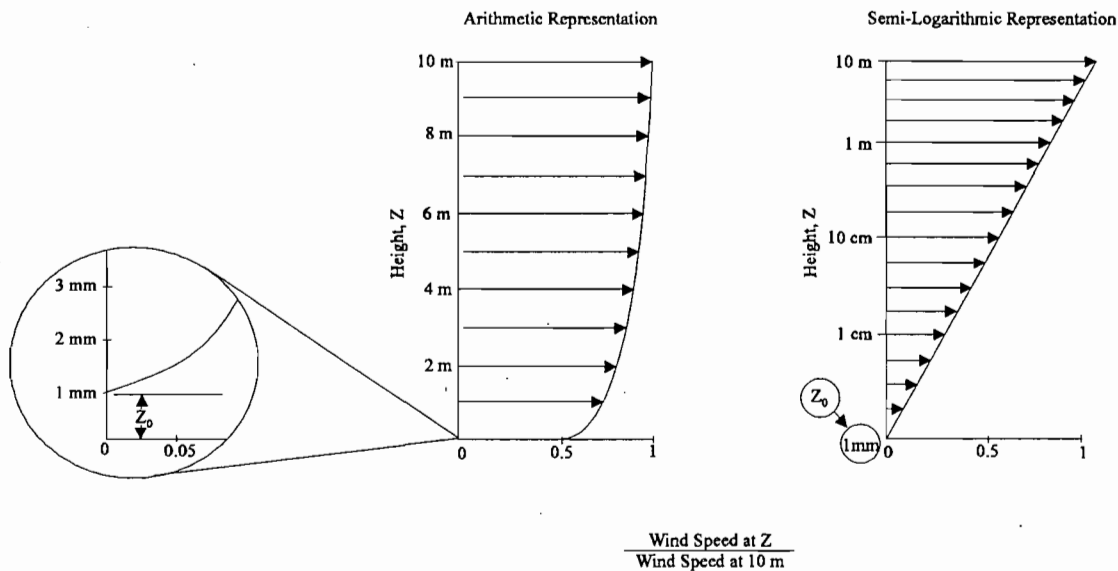


Figure 13.2.5-1. Illustration of logarithmic velocity profile.

Emissions generated by wind erosion are also dependent on the frequency of disturbance of the erodible surface because each time that a surface is disturbed, its erosion potential is restored. A disturbance is defined as an action that results in the exposure of fresh surface material. On a storage pile, this would occur whenever aggregate material is either added to or removed from the old surface. A disturbance of an exposed area may also result from the turning of surface material to a depth exceeding the size of the largest pieces of material present.

#### 13.2.5.3 Predictive Emission Factor Equation<sup>4</sup>

The emission factor for wind-generated particulate emissions from mixtures of erodible and nonerodible surface material subject to disturbance may be expressed in units of grams per square meter ( $\text{g}/\text{m}^2$ ) per year as follows:

$$\text{Emission factor} = k \sum_{i=1}^N P_i \quad (2)$$

where:

$k$  = particle size multiplier

$N$  = number of disturbances per year

$P_i$  = erosion potential corresponding to the observed (or probable) fastest mile of wind for the  $i$ th period between disturbances,  $g/m^2$

The particle size multiplier ( $k$ ) for Equation 2 varies with aerodynamic particle size, as follows:

| Aerodynamic Particle Size Multipliers For Equation 2 |             |             |              |
|------------------------------------------------------|-------------|-------------|--------------|
| 30 $\mu m$                                           | <15 $\mu m$ | <10 $\mu m$ | <2.5 $\mu m$ |
| 1.0                                                  | 0.6         | 0.5         | 0.2          |

This distribution of particle size within the under 30 micrometer ( $\mu m$ ) fraction is comparable to the distributions reported for other fugitive dust sources where wind speed is a factor. This is illustrated, for example, in the distributions for batch and continuous drop operations encompassing a number of test aggregate materials (see Section 13.2.4).

In calculating emission factors, each area of an erodible surface that is subject to a different frequency of disturbance should be treated separately. For a surface disturbed daily,  $N = 365$  per year, and for a surface disturbance once every 6 months,  $N = 2$  per year.

The erosion potential function for a dry, exposed surface is:

$$P = 58 (u^* - u_t^*)^2 + 25 (u^* - u_t^*) \quad (3)$$

$$P = 0 \text{ for } u^* \leq u_t^*$$

where:

$u^*$  = friction velocity (m/s)

$u_t$  = threshold friction velocity (m/s)

Because of the nonlinear form of the erosion potential function, each erosion event must be treated separately.

Equations 2 and 3 apply only to dry, exposed materials with limited erosion potential. The resulting calculation is valid only for a time period as long or longer than the period between disturbances. Calculated emissions represent intermittent events and should not be input directly into dispersion models that assume steady-state emission rates.

For uncrusted surfaces, the threshold friction velocity is best estimated from the dry aggregate structure of the soil. A simple hand sieving test of surface soil can be used to determine the mode of the surface aggregate size distribution by inspection of relative sieve catch amounts, following the procedure described below.

**FIELD PROCEDURE FOR DETERMINATION OF THRESHOLD FRICTION VELOCITY**  
(from a 1952 laboratory procedure published by W. S. Chepil):

1. Prepare a nest of sieves with the following openings: 4 mm, 2 mm, 1 mm, 0.5 mm, and 0.25 mm. Place a collector pan below the bottom (0.25 mm) sieve.
2. Collect a sample representing the surface layer of loose particles (approximately 1 cm in depth, for an encrusted surface), removing any rocks larger than about 1 cm in average physical diameter. The area to be sampled should be not less than 30 cm by 30 cm.
3. Pour the sample into the top sieve (4-mm opening), and place a lid on the top.
4. Move the covered sieve/pan unit by hand, using a broad circular arm motion in the horizontal plane. Complete 20 circular movements at a speed just necessary to achieve some relative horizontal motion between the sieve and the particles.
5. Inspect the relative quantities of catch within each sieve, and determine where the mode in the aggregate size distribution lies, i. e., between the opening size of the sieve with the largest catch and the opening size of the next largest sieve.
6. Determine the threshold friction velocity from Table 13.2.5-1.

The results of the sieving can be interpreted using Table 13.2.5-1. Alternatively, the threshold friction velocity for erosion can be determined from the mode of the aggregate size distribution using the graphical relationship described by Gillette.<sup>5-6</sup> If the surface material contains nonerodible elements that are too large to include in the sieving (i. e., greater than about 1 cm in diameter), the effect of the elements must be taken into account by increasing the threshold friction velocity.<sup>10</sup>

Table 13.2.5-1 (Metric Units). FIELD PROCEDURE FOR DETERMINATION OF THRESHOLD FRICTION VELOCITY

| Tyler Sieve No. | Opening (mm) | Midpoint (mm) | $u_t^*$ (cm/s) |
|-----------------|--------------|---------------|----------------|
| 5               | 4            |               |                |
| 9               | 2            | 3             | 100            |
| 16              | 1            | 1.5           | 76             |
| 32              | 0.5          | 0.75          | 58             |
| 60              | 0.25         | 0.375         | 43             |

Threshold friction velocities for several surface types have been determined by field measurements with a portable wind tunnel. These values are presented in Table 13.2.5-2.

Table 13.2.5-2 (Metric Units). THRESHOLD FRICTION VELOCITIES

| Material                                         | Threshold Friction Velocity (m/s) | Roughness Height (cm) | Threshold Wind Velocity At 10 m (m/s) |                        |
|--------------------------------------------------|-----------------------------------|-----------------------|---------------------------------------|------------------------|
|                                                  |                                   |                       | $z_0 = \text{Act}$                    | $z_0 = 0.5 \text{ cm}$ |
| Overburden <sup>a</sup>                          | 1.02                              | 0.3                   | 21                                    | 19                     |
| Scoria (roadbed material) <sup>a</sup>           | 1.33                              | 0.3                   | 27                                    | 25                     |
| Ground coal (surrounding coal pile) <sup>a</sup> | 0.55                              | 0.01                  | 16                                    | 10                     |
| Uncrusted coal pile <sup>a</sup>                 | 1.12                              | 0.3                   | 23                                    | 21                     |
| Scraper tracks on coal pile <sup>a,b</sup>       | 0.62                              | 0.06                  | 15                                    | 12                     |
| Fine coal dust on concrete pad <sup>c</sup>      | 0.54                              | 0.2                   | 11                                    | 10                     |

<sup>a</sup> Western surface coal mine. Reference 2.

<sup>b</sup> Lightly crusted.

<sup>c</sup> Eastern power plant. Reference 3.

The fastest mile of wind for the periods between disturbances may be obtained from the monthly LCD summaries for the nearest reporting weather station that is representative of the site in question.<sup>7</sup> These summaries report actual fastest mile values for each day of a given month. Because the erosion potential is a highly nonlinear function of the fastest mile, mean values of the fastest mile are inappropriate. The anemometer heights of reporting weather stations are found in Reference 8, and should be corrected to a 10-m reference height using Equation 1.

To convert the fastest mile of wind ( $u^+$ ) from a reference anemometer height of 10 m to the equivalent friction velocity ( $u^*$ ), the logarithmic wind speed profile may be used to yield the following equation:

$$u^* = 0.053 u_{10}^+ \quad (4)$$

where:

$u^*$  = friction velocity (m/s)

$u_{10}^+$  = fastest mile of reference anemometer for period between disturbances (m/s)

This assumes a typical roughness height of 0.5 cm for open terrain. Equation 4 is restricted to large relatively flat piles or exposed areas with little penetration into the surface wind layer.

If the pile significantly penetrates the surface wind layer (i. e., with a height-to-base ratio exceeding 0.2), it is necessary to divide the pile area into subareas representing different degrees of exposure to wind. The results of physical modeling show that the frontal face of an elevated pile is exposed to wind speeds of the same order as the approach wind speed at the top of the pile.

For 2 representative pile shapes (conical and oval with flattop, 37-degree side slope), the ratios of surface wind speed ( $u_s$ ) to approach wind speed ( $u_r$ ) have been derived from wind tunnel studies.<sup>9</sup> The results are shown in Figure 13.2.5-2 corresponding to an actual pile height of 11 m, a reference (upwind) anemometer height of 10 m, and a pile surface roughness height ( $z_o$ ) of 0.5 cm. The measured surface winds correspond to a height of 25 cm above the surface. The area fraction within each contour pair is specified in Table 13.2.5-3.

Table 13.2.5-3. SUBAREA DISTRIBUTION FOR REGIMES OF  $u_s/u_r$ <sup>a</sup>

| Pile Subarea | Percent Of Pile Surface Area |         |         |         |
|--------------|------------------------------|---------|---------|---------|
|              | Pile A                       | Pile B1 | Pile B2 | Pile B3 |
| 0.2a         | 5                            | 5       | 3       | 3       |
| 0.2b         | 35                           | 2       | 28      | 25      |
| 0.2c         | NA                           | 29      | NA      | NA      |
| 0.6a         | 48                           | 26      | 29      | 28      |
| 0.6b         | NA                           | 24      | 22      | 26      |
| 0.9          | 12                           | 14      | 15      | 14      |
| 1.1          | NA                           | NA      | 3       | 4       |

<sup>a</sup> NA = not applicable.

The profiles of  $u_s/u_r$  in Figure 13.2.5-2 can be used to estimate the surface friction velocity distribution around similarly shaped piles, using the following procedure:

1. Correct the fastest mile value ( $u^+$ ) for the period of interest from the anemometer height ( $z$ ) to a reference height of 10 m  $u_{10}^+$  using a variation of Equation 1:

$$u_{10}^+ = u^+ \frac{\ln (10/0.005)}{\ln (z/0.005)} \quad (5)$$

where a typical roughness height of 0.5 cm (0.005 m) has been assumed. If a site-specific roughness height is available, it should be used.

2. Use the appropriate part of Figure 13.2.5-2 based on the pile shape and orientation to the fastest mile of wind, to obtain the corresponding surface wind speed distribution ( $u_s^+$ )

$$u_s^+ = \frac{(u_s)}{u_r} u_{10}^+ \quad (6)$$

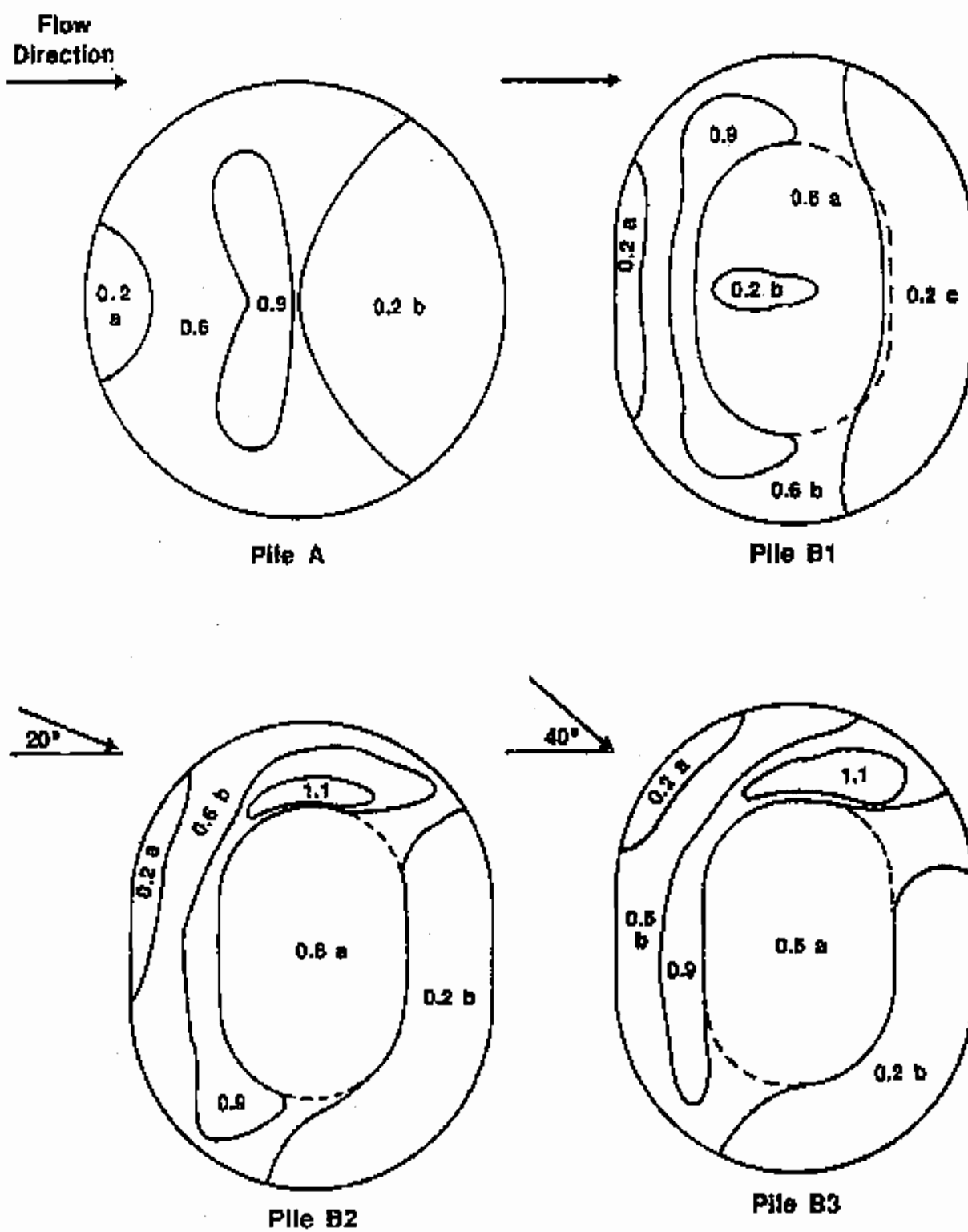


Figure 13.2.5-2. Contours of normalized surface windspeeds,  $u_s/u_r$ .



3. For any subarea of the pile surface having a narrow range of surface wind speed, use a variation of Equation 1 to calculate the equivalent friction velocity ( $u^*$ ):

$$u^* = \frac{0.4u_s^+}{\frac{25}{\ln 0.5}} = 0.10u_s^+ \quad (7)$$

From this point on, the procedure is identical to that used for a flat pile, as described above.

Implementation of the above procedure is carried out in the following steps:

1. Determine threshold friction velocity for erodible material of interest (see Table 13.2.5-2 or determine from mode of aggregate size distribution).
2. Divide the exposed surface area into subareas of constant frequency of disturbance (N).
3. Tabulate fastest mile values ( $u^+$ ) for each frequency of disturbance and correct them to 10 m ( $u^+$ ) using Equation 5.5
4. Convert fastest mile values ( $u_{10}$ ) to equivalent friction velocities ( $u^*$ ), taking into account (a) the uniform wind exposure of nonelevated surfaces, using Equation 4, or (b) the nonuniform wind exposure of elevated surfaces (piles), using Equations 6 and 7.
5. For elevated surfaces (piles), subdivide areas of constant N into subareas of constant  $u^*$  (i. e., within the isopleth values of  $u_s/u_r$  in Figure 13.2.5-2 and Table 13.2.5-3) and determine the size of each subarea.
6. Treating each subarea (of constant N and  $u^*$ ) as a separate source, calculate the erosion potential ( $P_i$ ) for each period between disturbances using Equation 3 and the emission factor using Equation 2.
7. Multiply the resulting emission factor for each subarea by the size of the subarea, and add the emission contributions of all subareas. Note that the highest 24-hour (hr) emissions would be expected to occur on the windiest day of the year. Maximum emissions are calculated assuming a single event with the highest fastest mile value for the annual period.

The recommended emission factor equation presented above assumes that all of the erosion potential corresponding to the fastest mile of wind is lost during the period between disturbances. Because the fastest mile event typically lasts only about 2 minutes, which corresponds roughly to the half-life for the decay of actual erosion potential, it could be argued that the emission factor overestimates particulate emissions. However, there are other aspects of the wind erosion process that offset this apparent conservatism:

1. The fastest mile event contains peak winds that substantially exceed the mean value for the event.
2. Whenever the fastest mile event occurs, there are usually a number of periods of

slightly lower mean wind speed that contain peak gusts of the same order as the fastest mile wind speed.

Of greater concern is the likelihood of overprediction of wind erosion emissions in the case of surfaces disturbed infrequently in comparison to the rate of crust formation.

#### 13.2.5.4 Example 1: Calculation for wind erosion emissions from conically shaped coal pile

A coal burning facility maintains a conically shaped surge pile 11 m in height and 29.2 m in base diameter, containing about 2000 megagrams (Mg) of coal, with a bulk density of 800 kilograms per cubic meter ( $\text{kg/m}^3$ ) (50 pounds per cubic feet [ $\text{lb/ft}^3$ ]). The total exposed surface area of the pile is calculated as follows:

$$\begin{aligned} S &= \pi r (r^2 + h^2) \\ &= 3.14(14.6) (14.6)^2 + (11.0)^2 \\ &= 838 \text{ m}^2 \end{aligned}$$

Coal is added to the pile by means of a fixed stacker and reclaimed by front-end loaders operating at the base of the pile on the downwind side. In addition, every 3 days 250 Mg (12.5 percent of the stored capacity of coal) is added back to the pile by a topping off operation, thereby restoring the full capacity of the pile. It is assumed that (a) the reclaiming operation disturbs only a limited portion of the surface area where the daily activity is occurring, such that the remainder of the pile surface remains intact, and (b) the topping off operation creates a fresh surface on the entire pile while restoring its original shape in the area depleted by daily reclaiming activity.

Because of the high frequency of disturbance of the pile, a large number of calculations must be made to determine each contribution to the total annual wind erosion emissions. This illustration will use a single month as an example.

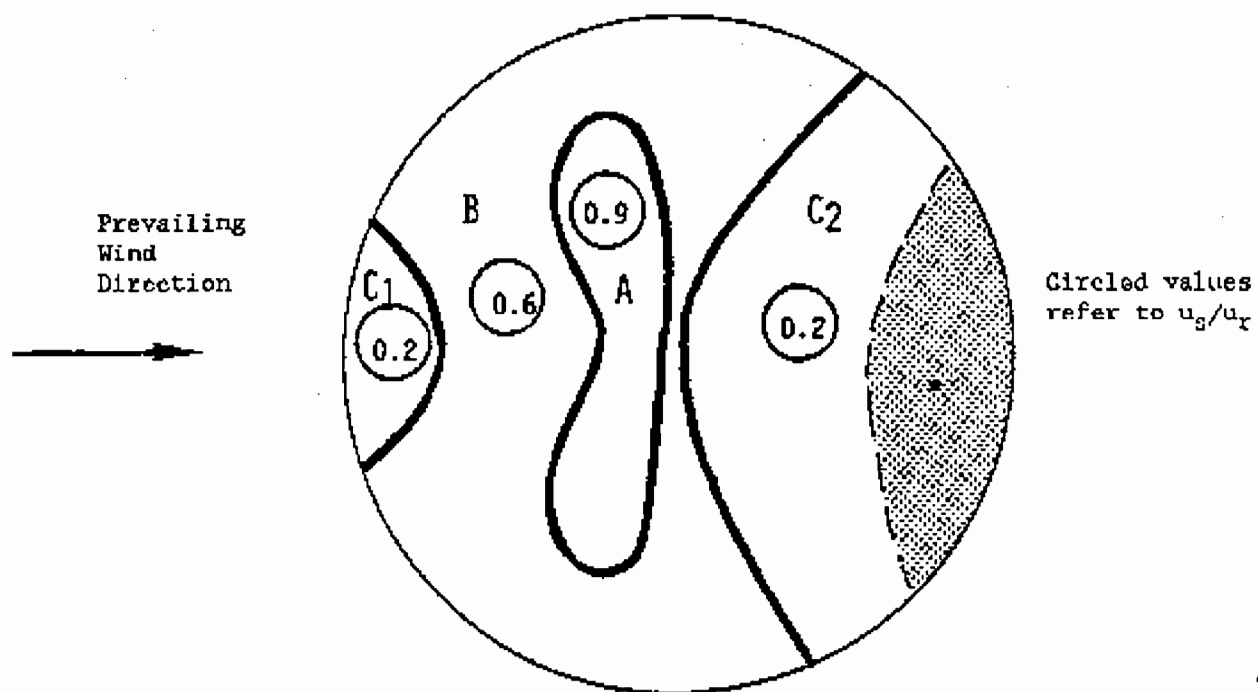
Step 1: In the absence of field data for estimating the threshold friction velocity, a value of 1.12 m/s is obtained from Table 13.2.5-2.

Step 2: Except for a small area near the base of the pile (see Figure 13.2.5-3), the entire pile surface is disturbed every 3 days, corresponding to a value of  $N = 120$  per year. It will be shown that the contribution of the area where daily activity occurs is negligible so that it does not need to be treated separately in the calculations.

Step 3: The calculation procedure involves determination of the fastest mile for each period of disturbance. Figure 13.2.5-4 shows a representative set of values (for a 1-month period) that are assumed to be applicable to the geographic area of the pile location. The values have been separated into 3-day periods, and the highest value in each period is indicated. In this example, the anemometer height is 7 m, so that a height correction to 10 m is needed for the fastest mile values. From Equation 5,

$$\begin{aligned} u_{10}^+ &= u_7^+ \left( \frac{\ln(10/0.005)}{\ln(7/0.005)} \right) \\ u_{10}^+ &= 1.05 u_7^+ \end{aligned}$$

Step 4: The next step is to convert the fastest mile value for each 3-day period into the



\* A portion of C<sub>2</sub> is disturbed daily by reclaiming activities.

| Area ID                         | $\frac{u_s}{u_r}$ | Pile Surface |                        |
|---------------------------------|-------------------|--------------|------------------------|
|                                 |                   | %            | Area (m <sup>2</sup> ) |
| A                               | 0.9               | 12           | 101                    |
| B                               | 0.6               | 48           | 402                    |
| C <sub>1</sub> + C <sub>2</sub> | 0.2               | 40           | <u>335</u>             |
| Total                           |                   |              | 838                    |

Figure 13.2.5-3. Example 1: Pile surface areas within each wind speed regime.

# Local Climatological Data

## Monthly Summary



| Wind           |                        |                      |              |           | Date |
|----------------|------------------------|----------------------|--------------|-----------|------|
| Resultant Dir. | Resultant Speed M.P.H. | Average Speed M.P.H. | Fastest Mile |           |      |
|                |                        |                      | Speed M.P.H. | Direction |      |
| 13             | 14                     | 15                   | 16           | 17        | 22   |
| 30             | 5.3                    | 6.9                  | 9            | 36        | 1    |
| 01             | 10.5                   | 10.6                 | 14           | 01        | 2    |
| 10             | 2.4                    | 6.0                  | 10           | 02        | 3    |
| 13             | 11.0                   | 11.4                 | 16           | 13        | 4    |
| 12             | 11.3                   | 11.9                 | 15           | 11        | 5    |
| 20             | 11.1                   | 19.0                 | 29           | 30        | 6    |
| 29             | 19.6                   | 19.8                 | 30           | 30        | 7    |
| 29             | 10.9                   | 11.2                 | 17           | 30        | 8    |
| 22             | 3.0                    | 8.1                  | 15           | 13        | 9    |
| 14             | 14.6                   | 15.1                 | 23           | 12        | 10   |
| 29             | 22.3                   | 23.3                 | 31           | 29        | 11   |
| 17             | 7.9                    | 13.5                 | 23           | 17        | 12   |
| 21             | 7.7                    | 15.5                 | 18           | 18        | 13   |
| 10             | 4.5                    | 9.6                  | 22           | 13        | 14   |
| 10             | 6.7                    | 8.8                  | 13           | 11        | 15   |
| 01             | 13.7                   | 13.8                 | 21           | 36        | 16   |
| 33             | 11.2                   | 11.5                 | 15           | 34        | 17   |
| 27             | 4.3                    | 5.8                  | 12           | 31        | 18   |
| 32             | 9.3                    | 10.2                 | 14           | 35        | 19   |
| 24             | 7.5                    | 7.8                  | 16           | 24        | 20   |
| 22             | 10.3                   | 10.6                 | 16           | 20        | 21   |
| 32             | 17.1                   | 17.3                 | 25           | 32        | 22   |
| 29             | 2.4                    | 8.5                  | 14           | 13        | 23   |
| 07             | 5.9                    | 8.8                  | 15           | 02        | 24   |
| 34             | 11.3                   | 11.7                 | 17           | 32        | 25   |
| 31             | 12.1                   | 12.2                 | 16           | 32        | 26   |
| 30             | 8.3                    | 8.5                  | 16           | 26        | 27   |
| 30             | 8.2                    | 8.3                  | 13           | 32        | 28   |
| 33             | 5.0                    | 6.6                  | 10           | 32        | 29   |
| 34             | 3.1                    | 5.2                  | 9            | 31        | 30   |
| 29             | 4.9                    | 5.5                  | 8            | 25        | 31   |
| For the Month: |                        |                      |              |           |      |
| 30             | 3.3                    | 11.1                 | 31           | 29        |      |
|                |                        |                      | Date: 11     |           |      |

Figure 13.2.5-4. Example daily fastest miles wind for periods of interest.

equivalent friction velocities for each surface wind regime (i. e.,  $u_s/u_r$  ratio) of the pile, using Equations 6 and 7. Figure 13.2.5-3 shows the surface wind speed pattern (expressed as a fraction of the approach wind speed at a height of 10 m). The surface areas lying within each wind speed regime are tabulated below the figure.

The calculated friction velocities are presented in Table 13.2.5-4. As indicated, only 3 of the periods contain a friction velocity which exceeds the threshold value of 1.12 m/s for an uncrusted coal pile. These 3 values all occur within the  $u_s/u_r = 0.9$  regime of the pile surface.

Table 13.2.5-4 (Metric And English Units). EXAMPLE 1:  
CALCULATION OF FRICTION VELOCITIES

| 3-Day Period | $u_7^+$ |      | $u_{10}^+$ |      | $u^* = 0.1u^+ \text{ (m/s)}$ |                |                |
|--------------|---------|------|------------|------|------------------------------|----------------|----------------|
|              | mph     | m/s  | mph        | m/s  | $s$                          |                |                |
|              |         |      |            |      | $u_s/u_r: 0.2$               | $u_s/u_r: 0.6$ | $u_s/u_r: 0.9$ |
| 1            | 14      | 6.3  | 15         | 6.6  | 0.13                         | 0.40           | 0.59           |
| 2            | 29      | 13.0 | 31         | 13.7 | 0.27                         | 0.82           | 1.23           |
| 3            | 30      | 13.4 | 32         | 14.1 | 0.28                         | 0.84           | 1.27           |
| 4            | 31      | 13.9 | 33         | 14.6 | 0.29                         | 0.88           | 1.31           |
| 5            | 22      | 9.8  | 23         | 10.3 | 0.21                         | 0.62           | 0.93           |
| 6            | 21      | 9.4  | 22         | 9.9  | 0.20                         | 0.59           | 0.89           |
| 7            | 16      | 7.2  | 17         | 7.6  | 0.15                         | 0.46           | 0.68           |
| 8            | 25      | 11.2 | 26         | 11.8 | 0.24                         | 0.71           | 1.06           |
| 9            | 17      | 7.6  | 18         | 8.0  | 0.16                         | 0.48           | 0.72           |
| 10           | 13      | 5.8  | 14         | 6.1  | 0.12                         | 0.37           | 0.55           |

Step 5: This step is not necessary because there is only 1 frequency of disturbance used in the calculations. It is clear that the small area of daily disturbance (which lies entirely within the  $u_s/u_r = 0.2$  regime) is never subject to wind speeds exceeding the threshold value.

Steps 6 and 7: The final set of calculations (shown in Table 13.2.5-5) involves the tabulation and summation of emissions for each disturbance period and for the affected subarea. The erosion potential (P) is calculated from Equation 3.

For example, the calculation for the second 3-day period is:

$$P = 58(u^* - u_t^*)^2 + 25(u^* - u_t^*)$$

$$P_2 = 58(1.23 - 1.12)^2 + 25(1.23 - 1.12)$$

$$= 0.70 + 2.75 = 3.45 \text{ g/m}^2$$

Table 13.2.5-5 (Metric Units). EXAMPLE 1: CALCULATION OF PM-10 EMISSIONS<sup>a</sup>

| 3-Day Period | $u^*$ (m/s) | $u^* - u_t^*$ (m/s) | P (g/m <sup>2</sup> ) | ID | Pile Surface Area (m <sup>2</sup> ) | kPA (g) |
|--------------|-------------|---------------------|-----------------------|----|-------------------------------------|---------|
| 2            | 1.23        | 0.11                | 3.45                  | A  | 101                                 | 170     |
| 3            | 1.27        | 0.15                | 5.06                  | A  | 101                                 | 260     |
| 4            | 1.31        | 0.19                | 6.84                  | A  | 101                                 | 350     |
| TOTAL        |             |                     |                       |    |                                     | 780     |

<sup>a</sup> Where  $u_t^* = 1.12$  m/s for uncrusted coal and  $k = 0.5$  for PM-10.

The emissions of particulate matter greater than 10  $\mu\text{m}$  (PM-10) generated by each event are found as the product of the PM-10 multiplier ( $k = 0.5$ ), the erosion potential (P), and the affected area of the pile (A).

As shown in Table 13.2.5-5, the results of these calculations indicate a monthly PM-10 emission total of 780 g.

#### 13.2.5.5 Example 2: Calculation for wind erosion from flat area covered with coal dust

A flat circular area 29.2 m in diameter is covered with coal dust left over from the total reclaiming of a conical coal pile described in the example above. The total exposed surface area is calculated as follows:

$$s = \frac{\pi}{4} d^2 = 0.785 (29.2)^2 = 670 \text{ m}^2$$

This area will remain exposed for a period of 1 month when a new pile will be formed.

**Step 1:** In the absence of field data for estimating the threshold friction velocity, a value of 0.54 m/s is obtained from Table 13.2.5-2.

**Step 2:** The entire surface area is exposed for a period of 1 month after removal of a pile and  $N = 1/\text{yr}$ .

**Step 3:** From Figure 13.2.5-4, the highest value of fastest mile for the 30-day period (31 mph) occurs on the 11th day of the period. In this example, the reference anemometer height is 7 m, so that a height correction is needed for the fastest mile value. From Step 3 of the previous example,  $u_{10}^+ = 1.05 u^+$ , so that  $u^+ \approx 33$  mph.

**Step 4:** Equation 4 is used to convert the fastest mile value of 14.6 m/s (33 mph) to an equivalent friction velocity of 0.77 m/s. This value exceeds the threshold friction velocity from Step 1 so that erosion does occur.

**Step 5:** This step is not necessary, because there is only 1 frequency of disturbance for the entire source area.

Steps 6 and 7: The PM-10 emissions generated by the erosion event are calculated as the product of the PM-10 multiplier ( $k = 0.5$ ), the erosion potential ( $P$ ) and the source area ( $A$ ). The erosion potential is calculated from Equation 3 as follows:

$$\begin{aligned}
 P &= 58(u^* - u_t^*)^2 + 25(u^* - u_t^*) \\
 P &= 58(0.77 - 0.54)^2 + 25(0.77 - 0.54) \\
 &= 3.07 + 5.75 \\
 &= 8.82 \text{ g/m}^2
 \end{aligned}$$

Thus the PM-10 emissions for the 1-month period are found to be:

$$\begin{aligned}
 E &= (0.5)(8.82 \text{ g/m}^2)(670 \text{ m}^2) \\
 &= 3.0 \text{ kg}
 \end{aligned}$$

#### References For Section 13.2.5

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**FACILITY SUPPLEMENTAL INFORMATION**  
**St Johns River Power Park**

**ATTACHMENT F-4**  
**Compliance Testing Plan**



Table 1, SJRPP Materials Handling Operations

| Emissions Unit                                       | EU ID# | AQCS         | Control Efficiency | PM (lb/hr) | Opacity (%) | Monitoring/ Testing Protocol |
|------------------------------------------------------|--------|--------------|--------------------|------------|-------------|------------------------------|
| Railcar Rotary Dumper - Building Emissions           | 023a   | 1, 3, & 4    | 97.0%              | 0.27       | 10          | a, b, c                      |
| Conveyor C-3 Tunnel Ventilation - 6,400 cfm          | 023b   | 1 & 4        | 98.0%              | 0.015      | 5           | a, b                         |
| Conveyor C-3 Tunnel Ventilation - 6,400 cfm          | 023b   | 1 & 4        | 98.0%              | 0.015      | 5           | a, b                         |
| Conveyor C-3 Tunnel Ventilation - 21,600 cfm         | 023b   | 1 & 4        | 98.0%              | 0.052      | 5           | a, b                         |
| Shiphold                                             | 023c   | 1, 4, & 6    | 70.0%              | 0.26       | 10          | a, b                         |
| Unloader Hopper and Spillage Collector Transfers     | 023d   | 1, 3, 4, & 6 | 85.0%              | 0.13       | 10          | a, b, c                      |
| Ship Unloader                                        | 023d   | 1, 2 & 4     | 85.0%              | 0.016      | 5           | a, b, c                      |
| Fuel Transfer Building                               | 023e   | 1, 2 & 4     | 98.0%              | 0.01       | 10          | a, b, c                      |
| Transfer Station No. 1                               | 023e   | 1, 2, & 4    | 98.0%              | 0.02       | 5           | a, b, c                      |
| Transfer Station No. 2                               | 023e   | 1, 2, & 4    | 98.0%              | 0.02       | 5           | a, b, c                      |
| Transfer Station No. 3                               | 023e   | 1, 2, & 4    | 98.0%              | 0.02       | 5           | a, b, c                      |
| Transfer Station No. 4                               | 023e   | 1 & 4        | 98.0%              | 0.02       | 5           | a, b                         |
| Transfer Station No. 5                               | 023e   | 1 & 4        | 98.0%              | 0.02       | 5           | a, b                         |
| Transfer Station No. 6                               | 023e   | 1 & 4        | 98.0%              | 0.02       | 5           | a, b                         |
| Transfer Station No. 7                               | 023e   | 1 & 4        | 98.0%              | 0.02       | 5           | a, b                         |
| Transfer Point 9GC-04 to 9GC-05                      | 023e   | 1            | 0.00%              | 0.003      | 5           | a, b                         |
| Stacker/Reclaimer (Stacker Mode)                     | 023f   | 1 & 3        | 82.67%             | 1.08       | 10          | a, b, c                      |
| Stacker                                              | 023f   | 1 & 3        | 82.67%             | 0.54       | 10          | a, b, c                      |
| Reclaimer                                            | 023f   | 1 & 3        | 89.67%             | 0.43       | 10          | a, b, c                      |
| Petroleum Coke Reclaimer System                      | 023g   | 1            | 60.0%              | 0.32       | 10          | a, b,                        |
| Emergency Reclaim Hoppers - Loadout                  | 023g   | 1            | 75.0%              | 0.29       | 10          | a, b                         |
| Limestone Reclaim Hopper                             | 023g   | 1            | 42.50%             | 0.14       | 10          | a, b                         |
| Limestone Railcar Dumper                             | 023h   | 1, 2, 3, & 4 | 97.0%              | 0.005      | 10          | a, b, c                      |
| Limestone Loadout                                    | 023i   | 1 & 3        | 97.0%              | 0.005      | 10          | a, b, c                      |
| Limestone Truck Loadout & Transfer                   | 023j   | 1            | 75.0%              | 0.099      | 10          | a, b                         |
| Limestone Storage Pile #1 - Existing                 | 023k   | 1 & 3        | 90.0%              | 0.26       | 10          | a, b, c                      |
| Limestone Storage Pile #2 - Fuel Yard                | 023k   | 1, 2 & 3     | 90.0%              | 0.12       | 10          | a, b, c                      |
| Coal Pile                                            | 023k   | 1, 2 & 3     | 90.0%              | 0.26       | 10          | a, b, c                      |
| Petroleum Coke Pile                                  | 023k   | 1, 2 & 3     | 90.0%              | 0.71       | 10          | a, b, c                      |
| Gypsum Storage Pile (Non-Commercial)                 | 023k   | 1            | 85.0%              | 0.07       | 10          | a, b                         |
| Fly Ash Loadouts 1A                                  | 023l   | 1 & 3        | 97.0%              | 0.028      | 10          | a, b, c                      |
| Fly Ash Loadouts 1B                                  | 023l   | 1 & 3        | 97.0%              | 0.028      | 10          | a, b, c                      |
| Fly Ash Loadouts 2A                                  | 023l   | 1 & 3        | 97.0%              | 0.028      | 10          | a, b, c                      |
| Fly Ash Loadouts 2B                                  | 023l   | 1 & 3        | 97.0%              | 0.028      | 10          | a, b, c                      |
| Bottom Ash Loadouts 1A                               | 023l   | 1            | 0.00%              | 0.042      | 10          | a, b                         |
| Bottom Ash Loadouts 1B                               | 023l   | 1            | 0.00%              | 0.042      | 10          | a, b                         |
| Bottom Ash Loadouts 2A                               | 023l   | 1            | 0.00%              | 0.042      | 10          | a, b                         |
| Bottom Ash Loadouts 2B                               | 023l   | 1            | 0.00%              | 0.042      | 10          | a, b                         |
| Gypsum Dewatering Building                           | 023m   | 1            | 0.00%              | 0.02       | 5           | a, b                         |
| Gypsum Storage Enclosure                             | 023n   | 1            | 0.00%              | 0.004      | 5           | a, b                         |
| Gypsum Truck Loadout                                 | 023o   | 1            | 0.00%              | 0.13       | 5           | a, b                         |
| Solid Waste Disposal Area                            | 023p   | 1 & 2        | 90.0%              | 0.31       | 10          | a, b, c                      |
| Unpaved Road, By-Product Transport                   | 023q   | 1 & 2        | 75.0%              | 0.15       | 10          | a, b, c                      |
| Rotary Railcar Unloader, Fuel Transfer Points (DC-1) | 043    | 1, 4, & 5    | 99.5%              | 0.083      | 5           | a, b                         |
| Fuel Handling Building (DC-3)                        | 046    | 1, 4, & 5    | 99.5%              | 0.11       | 5           | a, b                         |
| Unit #1 Fuel Storage Bins (DC-4)                     | 047    | 1, 4, & 5    | 99.5%              | 0.0042     | 5           | a, b                         |
| Unit #2 Fuel Storage Bins (DC-5)                     | 047    | 1, 4, & 5    | 99.5%              | 0.0042     | 5           | a, b                         |
| Railcar Unloader, Limestone Transfer Points (LDC-1)  | 048    | 1, 4, & 5    | 99.5%              | 0.012      | 5           | a, b                         |
| Limestone Loadout Facility (LDC-2)                   | 049    | 1, 4, & 5    | 99.5%              | 0.0058     | 5           | a, b                         |
| Limestone Reclaim Hopper, Transfer Points (3DC-01)   | 050    | 1, 4, & 5    | 99.5%              | 0.0003     | 5           | a, b                         |
| Limestone Silo (1DC-01)                              | 051    | 1, 4, & 5    | 99.5%              | 0.0003     | 5           | a, b, d                      |

Table 1, SJRPP Materials Handling Operations

| Emissions Unit              | EU ID# | AQCS      | Control Efficiency | PM (lb/hr) | Opacity (%) | Monitoring/ Testing Protocol |
|-----------------------------|--------|-----------|--------------------|------------|-------------|------------------------------|
| Limestone Silo (2DC-01)     | 051    | 1, 4, & 5 | 99.5%              | 0.0003     | 5           | a, b, d                      |
| Quick Lime Silo             | 052    | 4 & 5     | 99.5%              | 0.023      | 5           | a, b                         |
| Non-Saleable Ash Silo U#1-A | 053    | 4 & 5     | 99.5%              | 0.017      | 5           | a, b, d                      |
| Non-Saleable Ash Silo U#2-A | 053    | 4 & 5     | 99.5%              | 0.017      | 5           | a, b, d                      |
| Saleable Ash Silo 1A        | 054    | 4 & 5     | 99.5%              | 0.034      | 5           | a, b, d                      |
| Saleable Ash Silo 1B        | 054    | 4 & 5     | 99.5%              | 0.034      | 5           | a, b, d                      |
| Saleable Ash Silo 2A        | 054    | 4 & 5     | 99.5%              | 0.034      | 5           | a, b, d                      |
| Saleable Ash Silo 2B        | 054    | 4 & 5     | 99.5%              | 0.034      | 5           | a, b, d                      |

## Notes:

The Air Quality Control System (AQCS) descriptions used to meet the emissions limitations include the following:

- Use of Conditioned Materials (i.e., Materials with moisture content above 3.5 percent by weight)
- Use of Wet Suppressions Technologies (i.e., application of wetting agents, chemicals, or water as required)
- Use of Water Sprays (as required)
- Enclosures (i.e., Total, Partial, Covers, & Wind Screens)
- Dust Collection Systems (as required during operation of material handling systems)
- Best Operating Practices (as required)

## Monitoring and Testing Protocol:

- a. Inspection (and repair, as needed) as least once per year.
- b. Record keeping regarding routine inspection and repairs.
- c. Implementation of best operating practices regarding application of wet suppression, water sprays.
- d. Annual visible emission test - Method 9.

### III. EMISSIONS UNIT INFORMATION

#### A. TYPE OF EMISSIONS UNIT (Regulated and Unregulated Emissions Units)

Emissions Unit Information Section 1

SJRPP - Materials Handling & Storage Operations

#### Type of Emissions Unit Addressed in This Section

1. Regulated or Unregulated Emissions Unit? Check one :

- ☒ 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.

2. Single Process, Group of Processes, or Fugitive Only? 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.

III. Part 1 - 1

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Effective : 3-21-96

Emissions Unit Information Section 1

**B. GENERAL EMISSIONS UNIT INFORMATION**  
**(Regulated and Unregulated Emissions Units)**

**Emissions Unit Description and Status**

|                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           |                                      |                                                |
|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------------------|------------------------------------------------|
| 1. Description of Emissions Unit Addressed in This Section :<br><br>SJRPP - Materials Handling & Storage Operations                                                                                                                                                                                                                                                                                                                                                                       |                                      |                                                |
| 2. Emissions Unit Identification Number : 023<br>[ ] No Corresponding ID [ ] Unknown                                                                                                                                                                                                                                                                                                                                                                                                      |                                      |                                                |
| 3. Emissions Unit Status<br>Code : A                                                                                                                                                                                                                                                                                                                                                                                                                                                      | 4. Acid Rain Unit?<br>[ ] Yes [X] No | 5. Emissions Unit Major<br>Group SIC Code : 49 |
| 6. Emissions Unit Comment :<br><br>The revised emissions unit covers the non-point sources including ship unloading operations, the transfer operations, the conveyor belts, loadout operations (railcar, truck, & stackers), reclaim operations (limestone reclaimer, emergency reclaim hoppers, petroleum coke reclaim system, reclaimers, and truck loading), storage piles (coal, petroleum coke, limestone, and gypsum), cooling towers and storage areas (ash disposal and gypsum). |                                      |                                                |

**Emissions Unit Information Section**      1

SJRPP - Materials Handling & Storage Operations

**Emissions Unit Control Equipment**      1

1. Description :

EU023a

Railcar Rotary Dumper

Conditioned Materials, Partial Enclosure, and Water Sprays

2. Control Device or Method Code :      61

**Emissions Unit Information Section**      1

SJRPP - Materials Handling & Storage Operations

**Emissions Unit Control Equipment**      2

1. Description :

EU023b  
Emergency Reclaim Hoppers  
Conditioned Materials

2. Control Device or Method Code :      62

**Emissions Unit Information Section** 1

SJRPP - Materials Handling & Storage Operations

**Emissions Unit Control Equipment** 3

1. Description :

Ship Unloading Operations

EU023c & d

Partial Enclosures, Conditioned Materials, & Water Sprays

2. Control Device or Method Code : 61

**Emissions Unit Information Section**      1

SJRPP - Materials Handling & Storage Operations

**Emissions Unit Control Equipment**      4

1. Description :

EU023e

Transfer Stations & Fuel Transfer Building/Emergency Stackout

Partial Enclosures, Conditioned Materials, & Water Sprays

Figure EU028f

2. Control Device or Method Code :      61



**Emissions Unit Information Section**      1

SJRPP - Materials Handling & Storage Operations

**Emissions Unit Control Equipment**      5

|                                      |    |
|--------------------------------------|----|
| 1. Description :                     |    |
| Stacker & Reclaimers                 |    |
| EU023f                               |    |
| Conditioned Materials & Water Sprays |    |
| 2. Control Device or Method Code :   | 61 |

**Emissions Unit Information Section**      1

SJRPP - Materials Handling & Storage Operations

**Emissions Unit Control Equipment**      6

1. Description :

Reclaim Hoppers

EU023g

Conditioned Materials

2. Control Device or Method Code :      62

III. Part 3 -      6

**Emissions Unit Information Section** 1

SJRPP - Materials Handling & Storage Operations

**Emissions Unit Control Equipment** 7

|                                                          |    |
|----------------------------------------------------------|----|
| 1. Description :                                         |    |
| Limestone Railcar Dumper                                 |    |
| EU023h                                                   |    |
| Conditioned Materials, Partial Enclosure, & Water Sprays |    |
| 2. Control Device or Method Code :                       | 61 |

**Emissions Unit Information Section** 1

SJRPP - Materials Handling & Storage Operations

**Emissions Unit Control Equipment** 8

|                                       |    |
|---------------------------------------|----|
| 1. Description :                      |    |
| Limestone Loadouts (Truck or Railcar) |    |
| EU023i                                |    |
| Conditioned Materials                 |    |
| 2. Control Device or Method Code :    | 62 |

**Emissions Unit Information Section**      1

SJRPP - Materials Handling & Storage Operations

**Emissions Unit Control Equipment**      9

|                                    |    |
|------------------------------------|----|
| 1. Description :                   |    |
| Limestone Truck Loadout - Area #2  |    |
| EU023j                             |    |
| Conditioned Materials              |    |
| 2. Control Device or Method Code : | 62 |

**Emissions Unit Information Section**      1

SJRPP - Materials Handling & Storage Operations

**Emissions Unit Control Equipment**      10

1. Description :

Coal, Petroleum Coke, Limestone, Gypsum, and Disposal Ash

EU023k

Conditioned Materials & Water Sprays

2. Control Device or Method Code :      62

**Emissions Unit Information Section** 1

SJRPP - Materials Handling & Storage Operations

**Emissions Unit Control Equipment** 11

|                                                             |    |
|-------------------------------------------------------------|----|
| 1. Description :                                            |    |
| Fly Ash & Bottom Ash Loadouts                               |    |
| EU0231                                                      |    |
| Conditioned Materials, wet suppression, & Partial Enclosure |    |
| 2. Control Device or Method Code :                          | 62 |

**Emissions Unit Information Section** 1

SJRPP - Materials Handling & Storage Operations

**Emissions Unit Control Equipment** 12

1. Description :

Gypsum Dewatering Building

EU023m

Partial Enclosure & Conditioned Materials

2. Control Device or Method Code : 62



**Emissions Unit Information Section** 1

SJRPP - Materials Handling & Storage Operations

**Emissions Unit Control Equipment** 13

1. Description :

Gypsum Storage Building

EU023n

Partial Enclosure & Conditioned Materials

2. Control Device or Method Code : 62

**Emissions Unit Information Section** 1

SJRPP - Materials Handling & Storage Operations

**Emissions Unit Control Equipment** 14

|                                    |    |
|------------------------------------|----|
| 1. Description :                   |    |
| Gypsum Truck Loadout               |    |
| EU023o                             |    |
| Conditioned Materials              |    |
| 2. Control Device or Method Code : | 62 |

**Emissions Unit Information Section**      1

SJRPP - Materials Handling & Storage Operations

**Emissions Unit Control Equipment**      15

|                                    |    |
|------------------------------------|----|
| 1. Description :                   |    |
| Unpaved Roads                      |    |
| EU023p                             |    |
| Water Sprays                       |    |
| 2. Control Device or Method Code : | 61 |

**Emissions Unit Information Section**      1

SJRPP - Materials Handling & Storage Operations

**Emissions Unit Control Equipment**      16

|                                    |    |
|------------------------------------|----|
| 1. Description :                   |    |
| EU023q<br>Cooling Towers           |    |
| 2. Control Device or Method Code : | 15 |

### C. EMISSIONS UNIT DETAIL INFORMATION (Regulated Emissions Units Only)

**Emissions Unit Information Section**      1  
 SJRPP - Materials Handling & Storage Operations

#### Emissions Unit Details

|                                       |             |                    |
|---------------------------------------|-------------|--------------------|
| 1. Initial Startup Date :             | 06-Aug-1986 |                    |
| 2. Long-term Reserve Shutdown Date :  |             |                    |
| 3. Package Unit :                     |             |                    |
| Manufacturer :                        |             | Model Number :     |
| 4. Generator Nameplate Rating :       | MW          |                    |
| 5. Incinerator Information :          |             |                    |
| Dwell Temperature :                   |             | Degrees Fahrenheit |
| Dwell Time :                          |             | Seconds            |
| Incinerator Afterburner Temperature : |             | Degrees Fahrenheit |

#### Emissions Unit Operating Capacity

|                                                 |          |          |
|-------------------------------------------------|----------|----------|
| 1. Maximum Heat Input Rate :                    | mmBtu/hr |          |
| 2. Maximum Incinerator Rate :                   | lb/hr    | tons/day |
| 3. Maximum Process or Throughput Rate :         | 0        |          |
| 4. Maximum Production Rate :                    |          |          |
| 5. Operating Capacity Comment :                 |          |          |
| See Process Flow Diagrams for individual rates. |          |          |

#### Emissions Unit Operating Schedule

|                                        |  |                  |
|----------------------------------------|--|------------------|
| Requested Maximum Operating Schedule : |  |                  |
| 24 hours/day                           |  | 7 days/week      |
| 52 weeks/year                          |  | 8,760 hours/year |

**D. EMISSIONS UNIT REGULATIONS**  
**(Regulated Emissions Units Only)**

**Emissions Unit Information Section**     1  
SJRPP - Materials Handling & Storage Operations

**Rule Applicability Analysis**

These activities were subject to PSD Review including the application of BACT which was set as a 10% opacity limit on fugitive dust emissions.

In addition, some of the activities are subject to NSPS Subpart OOO for the overland conveyor system's transfer points when handling limestone and to NSPS Subpart Y for the coal handling operations (Conveyors & Transfer Points but not the the open storage piles).

**Emissions Unit Information Section** 1  
SJRP - Materials Handling & Storage Operations

**List of Applicable Regulations**

40 CFR 60.7 Notification and Recordkeeping

40 CFR 60.8 Performance Tests

40 CFR 60.11 Compliance with Standard and Maintenance Requirements

40 CFR 60.12 Circumvention

40 CFR 60.13 Monitoring Requirements

40 CFR 60.19 General Notifications and Reporting Requirements

40 CFR 60 Subpart Y- Standards of Performance for Coal Preparation Plants

Rule 62-204.800(7)(b)31., F.A.C., Adoption of 40 CFR 60 Subpart Y

Rule 62-204.800(7)(c), F.A.C., NSPS Controlling Standards

Rule 62-210.300(1), F.A.C., Air Construction Permits

Rule 62-210.650 Circumvention, F.A.C.

Rule 62-210.700(1), (4) & (6), F.A.C. Excess Emissions

62-297.310 General Test Requirements

III. Part 6b - 1

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**Emissions Unit Information Section**      1  
SJRP - Materials Handling & Storage Operations

**List of Applicable Regulations**

62-204.800(7)(d), F.A.C., Adoption of the General Provisions (As Noted)

62-204.800(7)(e), F.A.C., Adoption of the NSPS Appendices (As Noted)

Rule 62-210.350(1) & (2), F.A.C. Public Notice and Comment

Rule 62-210.550, F.A.C., Stack Height Policy

Rule 62-212.300, F.A.C., General Preconstruction Review Requirements

Rule 62-297.401(5) & (9), F.A.C.

40 CFR 60.250(a) Applicability and Designation of Affected Facility

40 CFR 60.252(c) Standards for Particulate Matter (To the Extent Applicable)

40 CFR 60.254(b)(2) Test Methods and Procedures

Rule 62-204.800(7)(b)64., F.A.C., Adoption of 40 CFR 60 Subpart OOO (As Noted)

40 CFR 60 Subpart OOO - Standards of Performance for Nonmettalic-Mineral Processing Plants

40 CFR 60.670(a)(1) Applicability and Designation of Affected Facilities (Transfer Points)

40 CFR 60.672(b) Standard for Particulate Matter

III. Part 6b - 2

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**List of Applicable Regulations**

40 CFR 60.675(a), (b)(2) & (c), (g), & (h) Test Methods & Procedures

40 CFR 60.676 Reporting and Recordkeeping

Jacksonville Environmental Protection Board, Rule 2 - Air Pollution (As Noted)

Rule 2.201, Adoption of Chapter 62-204, F.A.C., (As Noted)

Rule 2.301, Adoption of Chapter 62-210, F.A.C., (As Noted)

Rule 2.1101, Adoption of Chapter 62-297, F.A.C., (As Noted)

Rule 2.105, Maintenance of Air Pollution Control Devices

## E. EMISSION POINT (STACK/VENT) INFORMATION

Emissions Unit Information Section 1

SJRPP - Materials Handling & Storage Operations

Emission Point Description and Type :

|                                                                                                                                                                               |                                      |
|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------------------|
| 1. Identification of Point on Plot Plan or Flow Diagram :                                                                                                                     | EU023a-EU023p                        |
| 2. Emission Point Type Code :                                                                                                                                                 | 4                                    |
| 3. Descriptions of Emission Points Comprising this Emissions Unit for VE Tracking :<br>(limit to 100 characters per point)                                                    |                                      |
| 4. ID Numbers or Descriptions of Emission Units with this Emission Point in Common :<br>See Figure SJRPP-01 along with the individual process flow diagrams associated EU023. |                                      |
| 5. Discharge Type Code :                                                                                                                                                      | F                                    |
| 6. Stack Height :                                                                                                                                                             | 0 feet                               |
| 7. Exit Diameter :                                                                                                                                                            | 0.0 feet                             |
| 8. Exit Temperature :                                                                                                                                                         | 0 °F                                 |
| 9. Actual Volumetric Flow Rate :                                                                                                                                              | 0 acfm                               |
| 10. Percent Water Vapor :                                                                                                                                                     | 0.00 %                               |
| 11. Maximum Dry Standard Flow Rate :                                                                                                                                          | 0 dscfm                              |
| 12. Nonstack Emission Point Height :                                                                                                                                          | 0 feet                               |
| 13. Emission Point UTM Coordinates :                                                                                                                                          |                                      |
| Zone : 17                                                                                                                                                                     | East (km) : 0.000 North (km) : 0.000 |
| 14. Emission Point Comment :                                                                                                                                                  |                                      |

III. Part 7a - 1

## F. SEGMENT (PROCESS/FUEL) INFORMATION

Emissions Unit Information Section 1

SJRPP - Materials Handling & Storage Operations

Segment Description and Rate : Segment 1

|                                                                                                                                                   |                          |
|---------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------|
| 1. Segment Description (Process/Fuel Type and Associated Operating Method/Mode) :<br><br>Coal<br>See Flow Diagrams for individual transfer rates. |                          |
| 2. Source Classification Code (SCC) : 30501099                                                                                                    |                          |
| 3. SCC Units : Tons Transferred Or Handled                                                                                                        |                          |
| 4. Maximum Hourly Rate : 0.00                                                                                                                     | 5. Maximum Annual Rate : |
| 6. Estimated Annual Activity Factor : 100.00                                                                                                      |                          |
| 7. Maximum Percent Sulfur :                                                                                                                       | 8. Maximum Percent Ash : |
| 9. Million Btu per SCC Unit :                                                                                                                     |                          |
| 10. Segment Comment :                                                                                                                             |                          |

III. Part 8 - 1

## F. SEGMENT (PROCESS/FUEL) INFORMATION

Emissions Unit Information Section 1

SJRPP - Materials Handling & Storage Operations

Segment Description and Rate : Segment 2

|                                                                                                                                                             |                          |
|-------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------|
| 1. Segment Description (Process/Fuel Type and Associated Operating Method/Mode) :<br><br>Petroleum Coke<br>See Flow Diagrams for individual transfer rates. |                          |
| 2. Source Classification Code (SCC) : 30501099                                                                                                              |                          |
| 3. SCC Units : Tons Transferred Or Handled                                                                                                                  |                          |
| 4. Maximum Hourly Rate : 0.00                                                                                                                               | 5. Maximum Annual Rate : |
| 6. Estimated Annual Activity Factor : 100.00                                                                                                                |                          |
| 7. Maximum Percent Sulfur :                                                                                                                                 | 8. Maximum Percent Ash : |
| 9. Million Btu per SCC Unit :                                                                                                                               |                          |
| 10. Segment Comment :                                                                                                                                       |                          |

III. Part 8 - 2

## F. SEGMENT (PROCESS/FUEL) INFORMATION

Emissions Unit Information Section 1

SJRPP - Materials Handling & Storage Operations

**Segment Description and Rate :** Segment 3

|                                                                                                                                                        |                          |
|--------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------|
| 1. Segment Description (Process/Fuel Type and Associated Operating Method/Mode) :<br><br>Limestone<br>See Flow Diagrams for individual transfer rates. |                          |
| 2. Source Classification Code (SCC) : 30501099                                                                                                         |                          |
| 3. SCC Units : Tons Transferred Or Handled                                                                                                             |                          |
| 4. Maximum Hourly Rate : 0.00                                                                                                                          | 5. Maximum Annual Rate : |
| 6. Estimated Annual Activity Factor : 100.00                                                                                                           |                          |
| 7. Maximum Percent Sulfur :                                                                                                                            | 8. Maximum Percent Ash : |
| 9. Million Btu per SCC Unit :                                                                                                                          |                          |
| 10. Segment Comment :                                                                                                                                  |                          |

III. Part 8 - 3

## F. SEGMENT (PROCESS/FUEL) INFORMATION

Emissions Unit Information Section 1

SJRPP - Materials Handling & Storage Operations

**Segment Description and Rate :** Segment 4

|                                                                                                                                                     |                          |
|-----------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------|
| 1. Segment Description (Process/Fuel Type and Associated Operating Method/Mode) :<br><br>Gypsum<br>See Flow Diagrams for individual transfer rates. |                          |
| 2. Source Classification Code (SCC) : 30501099                                                                                                      |                          |
| 3. SCC Units : Tons Transferred Or Handled                                                                                                          |                          |
| 4. Maximum Hourly Rate : 0.00                                                                                                                       | 5. Maximum Annual Rate : |
| 6. Estimated Annual Activity Factor : 100.00                                                                                                        |                          |
| 7. Maximum Percent Sulfur :                                                                                                                         | 8. Maximum Percent Ash : |
| 9. Million Btu per SCC Unit :                                                                                                                       |                          |
| 10. Segment Comment :                                                                                                                               |                          |

III. Part 8 - 4

## F. SEGMENT (PROCESS/FUEL) INFORMATION

Emissions Unit Information Section 1

SJRPP - Materials Handling & Storage Operations

**Segment Description and Rate :** Segment 5

|                                                                                                                                                         |                          |
|---------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------|
| 1. Segment Description (Process/Fuel Type and Associated Operating Method/Mode) :<br><br>Bottom Ash<br>See Flow Diagrams for individual transfer rates. |                          |
| 2. Source Classification Code (SCC) : 30501099                                                                                                          |                          |
| 3. SCC Units : Tons Transferred Or Handled                                                                                                              |                          |
| 4. Maximum Hourly Rate : 0.00                                                                                                                           | 5. Maximum Annual Rate : |
| 6. Estimated Annual Activity Factor : 100.00                                                                                                            |                          |
| 7. Maximum Percent Sulfur :                                                                                                                             | 8. Maximum Percent Ash : |
| 9. Million Btu per SCC Unit :                                                                                                                           |                          |
| 10. Segment Comment :                                                                                                                                   |                          |

III. Part 8 - 5

## F. SEGMENT (PROCESS/FUEL) INFORMATION

Emissions Unit Information Section 1

SJRPP - Materials Handling & Storage Operations

**Segment Description and Rate :** Segment 6

|                                                                                                                                                      |                          |
|------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------|
| 1. Segment Description (Process/Fuel Type and Associated Operating Method/Mode) :<br><br>Fly Ash<br>See Flow Diagrams for individual transfer rates. |                          |
| 2. Source Classification Code (SCC) : 30501099                                                                                                       |                          |
| 3. SCC Units : Tons Transferred Or Handled                                                                                                           |                          |
| 4. Maximum Hourly Rate : 0.00                                                                                                                        | 5. Maximum Annual Rate : |
| 6. Estimated Annual Activity Factor : 100.00                                                                                                         |                          |
| 7. Maximum Percent Sulfur :                                                                                                                          | 8. Maximum Percent Ash : |
| 9. Million Btu per SCC Unit :                                                                                                                        |                          |
| 10. Segment Comment :                                                                                                                                |                          |

III. Part 8 - 6

DEP Form No. 62-210.900(1) - Form  
Effective : 3-21-96



**G. EMISSIONS UNIT POLLUTANTS**  
**(Regulated and Unregulated Emissions Units)**

**Emissions Unit Information Section**     1  
SJRPP - Materials Handling & Storage Operations

| 1. Pollutant Emitted | 2. Primary Control Device Code | 3. Secondary Control Device Code | 4. Pollutant Regulatory Code |
|----------------------|--------------------------------|----------------------------------|------------------------------|
| 1 - PM10             |                                |                                  | WP                           |
| 2 - PM               |                                |                                  | WP                           |

III. Part 9a - 1

**H. EMISSIONS UNIT POLLUTANT DETAIL INFORMATION**  
**(Regulated Emissions Units Only - Emissions Limited Pollutants Only)**

**Emissions Unit Information Section**     1  
SJRP - Materials Handling & Storage Operations

**Pollutant Potential/Estimated Emissions :**     Pollutant     1

|                                                                                      |    |           |
|--------------------------------------------------------------------------------------|----|-----------|
| 1. Pollutant Emitted : <b>PM10</b>                                                   |    |           |
| 2. Total Percent Efficiency of Control :                                             |    | %         |
| 3. Potential Emissions :                                                             |    |           |
| lb/hour                                                                              |    | tons/year |
| 4. Synthetically Limited?<br>[   ] Yes            [X ] No                            |    |           |
| 5. Range of Estimated Fugitive/Other Emissions:                                      |    |           |
|                                                                                      | to | tons/year |
| 6. Emissions Factor<br>Reference     AP-42                                           |    | Units     |
| 7. Emissions Method Code :     3                                                     |    |           |
| 8. Calculations of Emissions :<br><br>See Attachment EU023-05 for Emission Estimates |    |           |
| 9. Pollutant Potential/Estimated Emissions Comment :                                 |    |           |

III. Part 9b -     1

## SJRPP - Materials Handling & Storage Operations

**Pollutant Potential/Estimated Emissions :**      Pollutant      2

## Pollutant Information Section

1. Basis for Allowable Emissions Code :

**2. Future Effective Date of Allowable Emissions :**

### 3. Requested Allowable Emissions and Units :

#### 4. Equivalent Allowable Emissions :

1b/hour

tons/year

### 5. Method of Compliance :

6. Pollutant Allowable Emissions Comment (Desc. of Related Operating Method/Mode) :

**I. VISIBLE EMISSIONS INFORMATION**  
**(Regulated Emissions Units Only)**

**Emissions Unit Information Section**    1  
SJRPP - Materials Handling & Storage Operations

**Visible Emissions Limitation :**    Visible Emissions Limitation    1

|                                                                                                                                                                                                                                                                                            |
|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 1. Visible Emissions Subtype :                      10                                                                                                                                                                                                                                     |
| 2. Basis for Allowable Opacity :                      RULE                                                                                                                                                                                                                                 |
| 3. Requested Allowable Opacity :<br><div style="text-align: right; margin-right: 50px;">Normal Conditions :              10              %<br/>Exceptional Conditions :              100              %<br/>Maximum Period of Excess Opacity Allowed :                      min/hour</div> |
| 4. Method of Compliance :<br><br>EPA Method 9                                                                                                                                                                                                                                              |
| 5. Visible Emissions Comment :<br><br>See Individual Process Flow Diagrams for Requested VE Limitations.                                                                                                                                                                                   |

**I. VISIBLE EMISSIONS INFORMATION**  
**(Regulated Emissions Units Only)**

**Emissions Unit Information Section**    1  
SJRPP - Materials Handling & Storage Operations

**Visible Emissions Limitation :** Visible Emissions Limitation    2

|                                                                                                                                                                                                                                                                       |
|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 1. Visible Emissions Subtype :            5                                                                                                                                                                                                                           |
| 2. Basis for Allowable Opacity :            RULE                                                                                                                                                                                                                      |
| 3. Requested Allowable Opacity :<br><div style="text-align: right; margin-top: 10px;">Normal Conditions :            5            %<br/>Exceptional Conditions :            100            %<br/>Maximum Period of Excess Opacity Allowed :            min/hour</div> |
| 4. Method of Compliance :<br><br>EPA Method 9                                                                                                                                                                                                                         |
| 5. Visible Emissions Comment :<br><br>As Read at the Property Line<br>See Individual Process Flow Diagrams for Requested VE Limitations.                                                                                                                              |

**J. CONTINUOUS MONITOR INFORMATION**  
**(Regulated Emissions Units Only)**

**Emissions Unit Information Section**

III. Part 11 - 1

DEP Form No. 62-210.900(1) - Form  
Effective : 3-21-96

## K. PREVENTION OF SIGNIFICANT DETERIORATION (PSD) INCREMENT TRACKING INFORMATION

Emissions Unit Information Section 1

SJRPP - Materials Handling & Storage Operations

### PSD Increment Consumption Determination

#### 1. Increment Consuming for Particulate Matter or Sulfur Dioxide?

- ☐ The emissions unit is undergoing PSD review as part of this application, or has undergone PSD review previously, for particulate matter or sulfur dioxide. If so, emissions unit consumes increment.
- ☐ The facility addressed in this application is classified as an EPA major source pursuant to paragraph (c) of the definition of "major source of air pollution" in Chapter 62-213, F.A.C., and the emissions unit addressed in this section commenced (or will commence) construction after January 6, 1975. If so, baseline emissions are zero, and emissions unit consumes increment.
- ☐ The facility addressed in this application is classified as an EPA major source, and the emissions unit began initial operation after January 6, 1975, but before December 27, 1977. If so, baseline emissions are zero, and emissions unit consumes increment.
- ☒ For any facility, the emissions unit began (or will begin) initial operation after December 27, 1977. If so, baseline emissions are zero, and emissions unit consumes increment.
- ☐ None of the above apply. If so, the baseline emissions of the emissions unit are nonzero. In such case, additional analysis, beyond the scope of this application, is needed to determine whether changes in emissions have occurred (or will occur) after the baseline date that may consume or expand increment.



## 2. Increment Consuming for Nitrogen Dioxide?

- [ ] The emissions unit addressed in this section is undergoing PSD review as part of this application, or has undergone PSD review previously, for nitrogen dioxide. If so, emissions unit consumes increment.
- [ ] The facility addressed in this application is classified as an EPA major source pursuant to paragraph (c) of the definition of "major source of air pollution" in Chapter 62-213, F.A.C., and the emissions unit addressed in this section commenced (or will commence) construction after February 8, 1988. If so, baseline emissions are zero, and emissions unit consumes increment.
- [ ] The facility addressed in this application is classified as an EPA major source, and the emissions unit began initial operation after February 8, 1988, but before March 28, 1988. If so, baseline emissions are zero, and emissions unit consumes increment.
- [ ] For any facility, the emissions unit began (or will begin) initial operation after March 28, 1988. If so, baseline emissions are zero, and emissions unit consumes increment.
- [ ] None of the above apply. If so, baseline emissions of the emissions unit are nonzero. In such case, additional analysis, beyond the scope of this application, is needed to determine whether changes in emissions have occurred (or will occur) after the baseline date that may consume or expand increment.

|                                         |         |           |
|-----------------------------------------|---------|-----------|
| 3. Increment Consuming/Expanding Code : |         |           |
| PM : C                                  | SO2 :   | NO2 :     |
| 4. Baseline Emissions :                 |         |           |
| PM :                                    | lb/hour | tons/year |
| SO2 :                                   | lb/hour | tons/year |
| NO2 :                                   |         | tons/year |
| 5. PSD Comment :                        |         |           |

## L. EMISSIONS UNIT SUPPLEMENTAL INFORMATION

### Emissions Unit Information Section 1

SJRPP - Materials Handling & Storage Operations

#### **Supplemental Requirements for All Applications**

|                                                                   |          |
|-------------------------------------------------------------------|----------|
| 1. Process Flow Diagram :                                         | EU023-01 |
| 2. Fuel Analysis or Specification :                               | NA       |
| 3. Detailed Description of Control Equipment :                    | EU023-02 |
| 4. Description of Stack Sampling Facilities :                     | NA       |
| 5. Compliance Test Report :                                       | EU023-03 |
| 6. Procedures for Startup and Shutdown :                          | NA       |
| 7. Operation and Maintenance Plan :                               | NA       |
| 8. Supplemental Information for Construction Permit Application : | EU023-05 |
| 9. Other Information Required by Rule or Statue :                 | NA       |

#### **Additional Supplemental Requirements for Category I Applications Only**

|                                                          |
|----------------------------------------------------------|
| 10. Alternative Methods of Operations :                  |
| 11. Alternative Modes of Operation (Emissions Trading) : |

III. Part 13 - 1

12. Identification of Additional Applicable Requirements :

13. Compliance Assurance Monitoring  
Plan :

14. Acid Rain Application (Hard-copy Required) :

Acid Rain Part - Phase II (Form No. 62-210.900(1)(a))

Repowering Extension Plan (Form No. 62-210.900(1)(a)1.)

New Unit Exemption (Form No. 62-210.900(1)(a)2.)

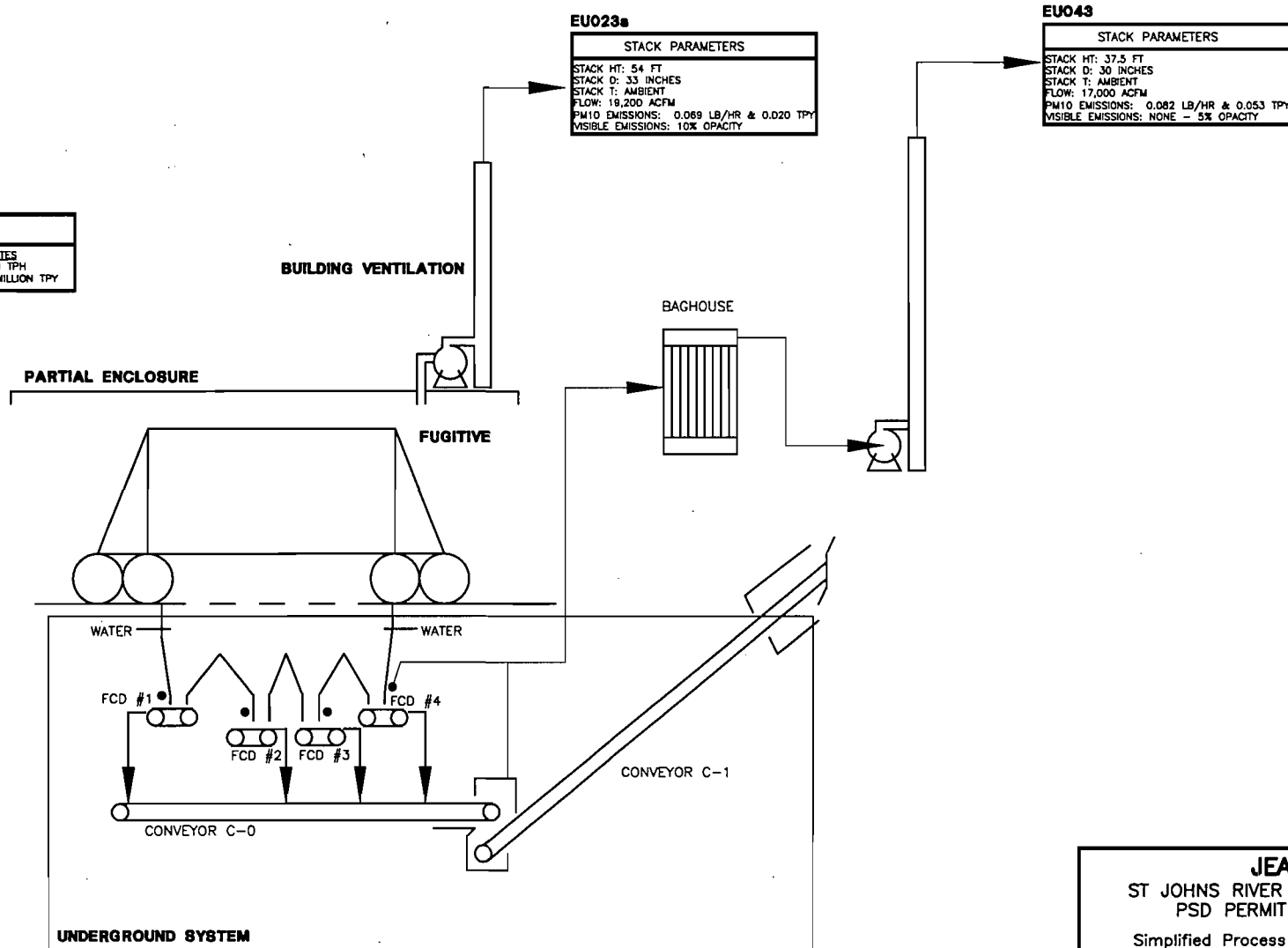
Retired Unit Exemption (Form No. 62-210.900(1)(a)3.)

**EMISSIONS UNIT EU023**  
**Materials Handling & Storage Operations**

**ATTACHMENT EU023-01**  
**Process Flow Diagrams & Figure SJFPP01**

# ST JOHNS RIVER POWER PARK ROTARY RAILCAR DUMPER ATTACHMENT EU023a-01

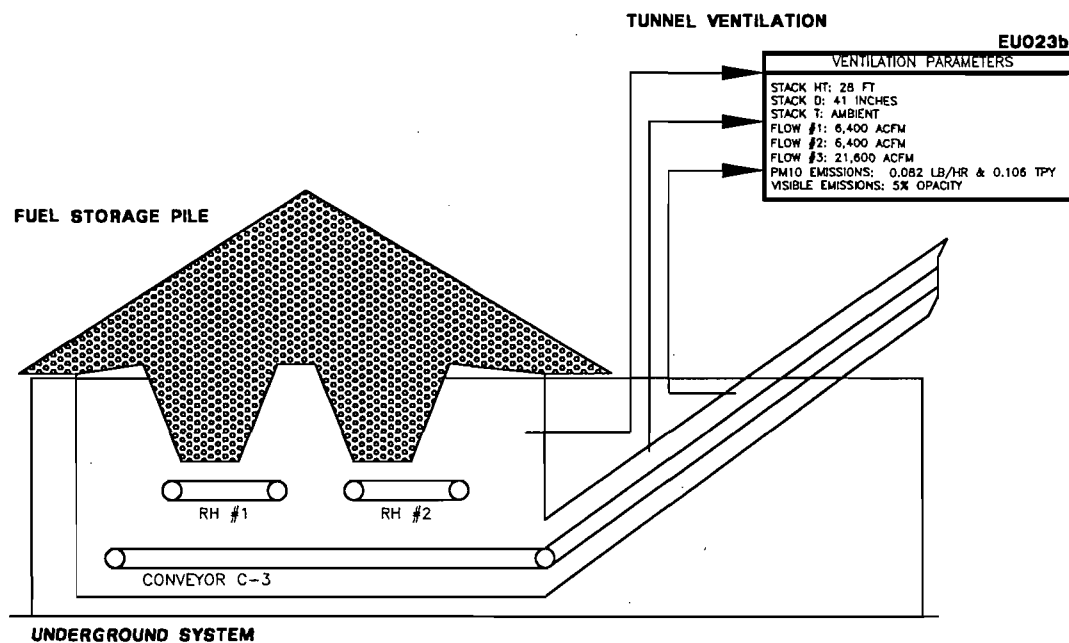
| HANDLING RATES                  |
|---------------------------------|
| SURPP THROUGHPUT RATES          |
| UNLOADING RATE: 4,000 TPH       |
| COAL/PET. COKE: 5.2 MILLION TPY |



NOTE: COVERS ON CONVEYORS

|                                                                                                                           |              |                           |  |
|---------------------------------------------------------------------------------------------------------------------------|--------------|---------------------------|--|
| <b>JEA</b><br>ST JOHNS RIVER POWER PARK<br>PSD PERMIT UPDATE<br>Simplified Process Flow Diagram<br>Emissions Unit ID 023a |              |                           |  |
| <b>FOSTER WHEELER ENVIRONMENTAL CORPORATION</b>                                                                           |              |                           |  |
| SCALE N/A                                                                                                                 | PREPARED DJG | CAD FILE NO. EU023aPF.DWG |  |
| DATE: 04/28/99                                                                                                            | CHECKED MAE  | FIGURE NO. EU023a-01      |  |
|                                                                                                                           | APPROVED DJG |                           |  |

# ST JOHNS RIVER POWER PARK EMERGENCY RECLAIM HOPPERS ATTACHMENT EU023b-01



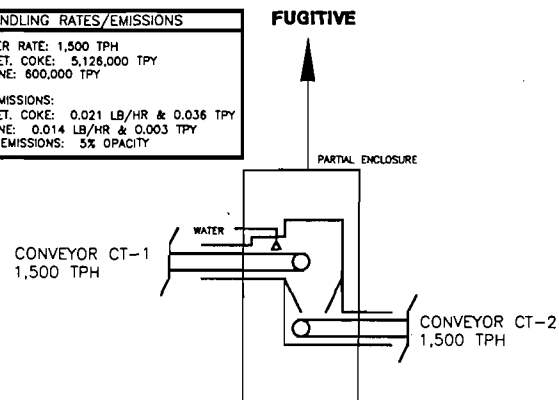
NOTE: COVERS ON CONVEYORS

|                                                   |          |     |              |
|---------------------------------------------------|----------|-----|--------------|
| <b>JEA</b>                                        |          |     |              |
| ST JOHNS RIVER POWER PARK<br>PSD PERMIT UPDATE    |          |     |              |
| Simplified Process Flow Diagram                   |          |     |              |
| Emissions Unit ID 023b                            |          |     |              |
| <b>F</b> FOSTER WHEELER ENVIRONMENTAL CORPORATION |          |     |              |
| SCALE N/A                                         | PREPARED | DJG | CAD FILE NO. |
|                                                   | CHECKED  | MAE | EU023bPF.DWG |
| DATE: 04/08/99                                    | APPROVED | DJF | FIGURE NO.   |
|                                                   |          |     | EU023b-01    |

# ST JOHNS RIVER POWER PARK TRANSFER STATIONS ATTACHMENT EU023e-01a

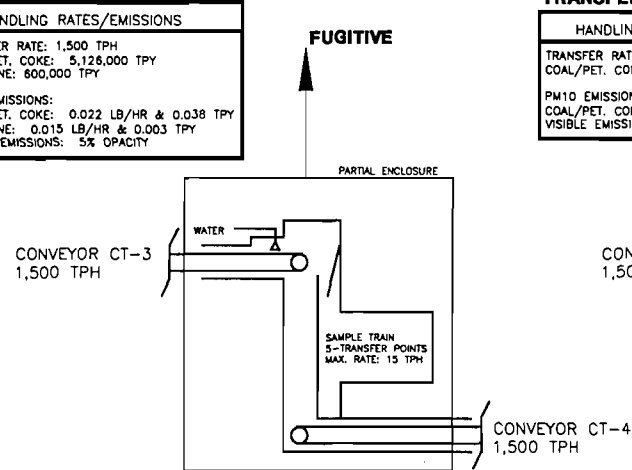
**TRANSFER STATION NO. 1**

| HANDLING RATES/EMISSIONS                |
|-----------------------------------------|
| TRANSFER RATE: 1,500 TPH                |
| COAL/PET. COKE: 5,126,000 TPY           |
| LIMESTONE: 600,000 TPY                  |
| PM10 EMISSIONS:                         |
| COAL/PET. COKE: 0.021 LB/HR & 0.036 TPY |
| LIMESTONE: 0.014 LB/HR & 0.003 TPY      |
| VISIBLE EMISSIONS: 5% OPACITY           |



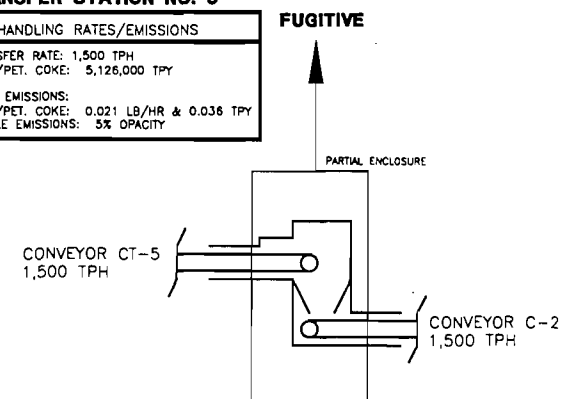
**TRANSFER STATION NO. 3**

| HANDLING RATES/EMISSIONS                |
|-----------------------------------------|
| TRANSFER RATE: 1,500 TPH                |
| COAL/PET. COKE: 5,126,000 TPY           |
| LIMESTONE: 600,000 TPY                  |
| PM10 EMISSIONS:                         |
| COAL/PET. COKE: 0.022 LB/HR & 0.038 TPY |
| LIMESTONE: 0.015 LB/HR & 0.003 TPY      |
| VISIBLE EMISSIONS: 5% OPACITY           |



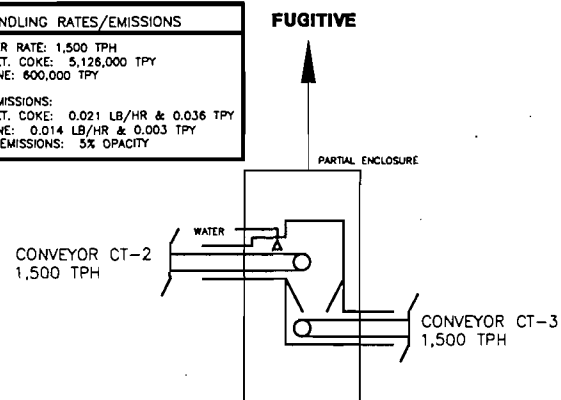
**TRANSFER STATION NO. 5**

| HANDLING RATES/EMISSIONS                |
|-----------------------------------------|
| TRANSFER RATE: 1,500 TPH                |
| COAL/PET. COKE: 5,126,000 TPY           |
| PM10 EMISSIONS:                         |
| COAL/PET. COKE: 0.021 LB/HR & 0.036 TPY |
| VISIBLE EMISSIONS: 5% OPACITY           |



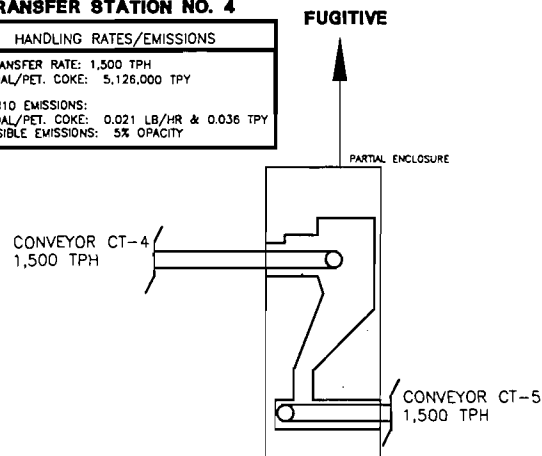
**TRANSFER STATION NO. 2**

| HANDLING RATES/EMISSIONS                |
|-----------------------------------------|
| TRANSFER RATE: 1,500 TPH                |
| COAL/PET. COKE: 5,126,000 TPY           |
| LIMESTONE: 600,000 TPY                  |
| PM10 EMISSIONS:                         |
| COAL/PET. COKE: 0.021 LB/HR & 0.036 TPY |
| LIMESTONE: 0.014 LB/HR & 0.003 TPY      |
| VISIBLE EMISSIONS: 5% OPACITY           |



**TRANSFER STATION NO. 4**

| HANDLING RATES/EMISSIONS                |
|-----------------------------------------|
| TRANSFER RATE: 1,500 TPH                |
| COAL/PET. COKE: 5,126,000 TPY           |
| PM10 EMISSIONS:                         |
| COAL/PET. COKE: 0.021 LB/HR & 0.036 TPY |
| VISIBLE EMISSIONS: 5% OPACITY           |



**NOTE: COVERS ON CONVEYORS**

|                                                                                                                                  |               |                             |  |
|----------------------------------------------------------------------------------------------------------------------------------|---------------|-----------------------------|--|
| <b>JEA</b><br><b>ST JOHNS RIVER POWER PARK</b><br><b>REPOWERING</b><br>Simplified Process Flow Diagram<br>Emissions Unit ID 023e |               |                             |  |
| <b>FOSTER WHEELER ENVIRONMENTAL CORPORATION</b>                                                                                  |               |                             |  |
| SCALE: N/A                                                                                                                       | PREPARED: DJG | CAD FILE NO.: EU023ePFG.DWG |  |
| DATE: 04/08/99                                                                                                                   | CHECKED: MAE  | FIGURE NO.: EU023e-01a      |  |
|                                                                                                                                  | APPROVED: DJF |                             |  |

# ST JOHNS RIVER POWER PARK TRANSFER STATIONS ATTACHMENT EU023e-01b

## TRANSFER STATION NO. 6

| HANDLING RATES/EMISSIONS                |
|-----------------------------------------|
| TRANSFER RATE: 2,000 TPH                |
| COAL/PET. COKE: 5,128,000 TPY           |
| PM10 EMISSIONS:                         |
| COAL/PET. COKE: 0.021 LB/HR & 0.027 TPY |
| VISIBLE EMISSIONS: 5% OPACITY           |

FUGITIVE

PARTIAL ENCLOSURE

CONVEYOR C-4  
2,000 TPH

CONVEYOR CT-6  
2,000 TPH

## TRANSFER STATION NO. 7

| HANDLING RATES/EMISSIONS                |
|-----------------------------------------|
| TRANSFER RATE: 2,000 TPH                |
| COAL/PET. COKE: 5,128,000 TPY           |
| PM10 EMISSIONS:                         |
| COAL/PET. COKE: 0.021 LB/HR & 0.027 TPY |
| VISIBLE EMISSIONS: 5% OPACITY           |

FUGITIVE

PARTIAL ENCLOSURE

CONVEYOR CT-6  
2,000 TPH

CONVEYOR CT-4  
2,000 TPH

## GYPHUM TRANSFER TOWER

| HANDLING RATES/EMISSIONS         |
|----------------------------------|
| TRANSFER RATE: 144 TPH           |
| COAL/PET. COKE: 1,261,440 TPY    |
| PM10 EMISSIONS:                  |
| CYPSUM: 0.0034 LB/HR & 0.015 TPY |
| VISIBLE EMISSIONS: 5% OPACITY    |

FUGITIVE

PARTIAL ENCLOSURE

CONVEYOR 9GC-04  
144 TPH

CONVEYOR 9GC-05  
144 TPH

NOTE: COVERS ON CONVEYORS

**JEA**  
ST JOHNS RIVER POWER PARK  
REPOWERING

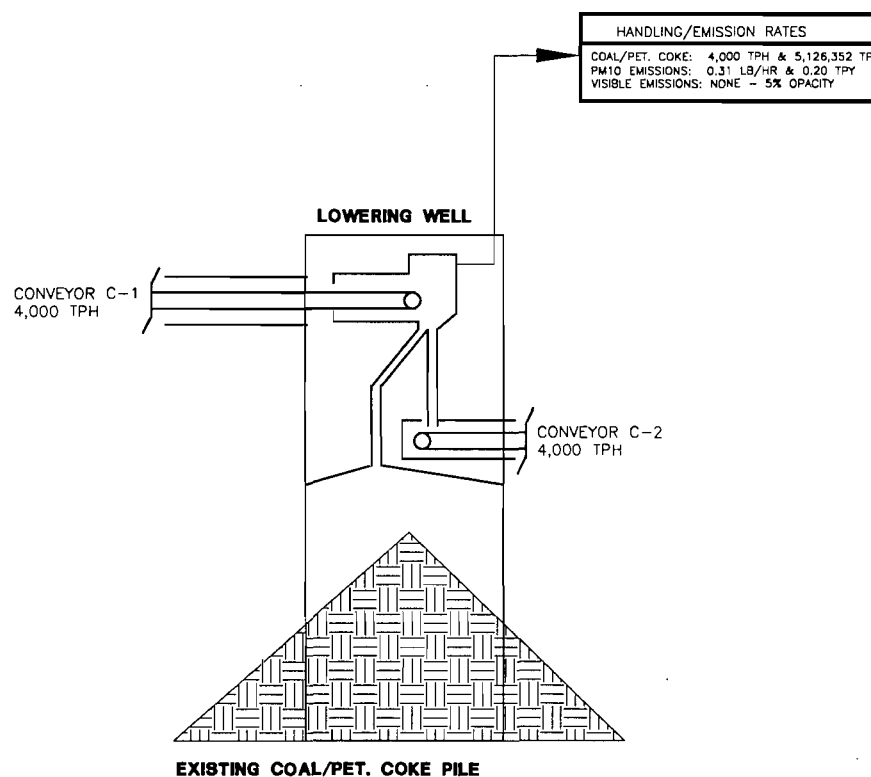
Simplified Process Flow Diagram  
Emissions Unit ID 023e

**FOSTER WHEELER ENVIRONMENTAL CORPORATION**

|                |              |                            |
|----------------|--------------|----------------------------|
| SCALE N/A      | PREPARED DJG | CAD FILE NO. EU023ePFD.DWG |
| DATE: 04/08/99 | CHECKED MAE  | FIGURE NO. EU023e-01b      |
|                | APPROVED DJF |                            |



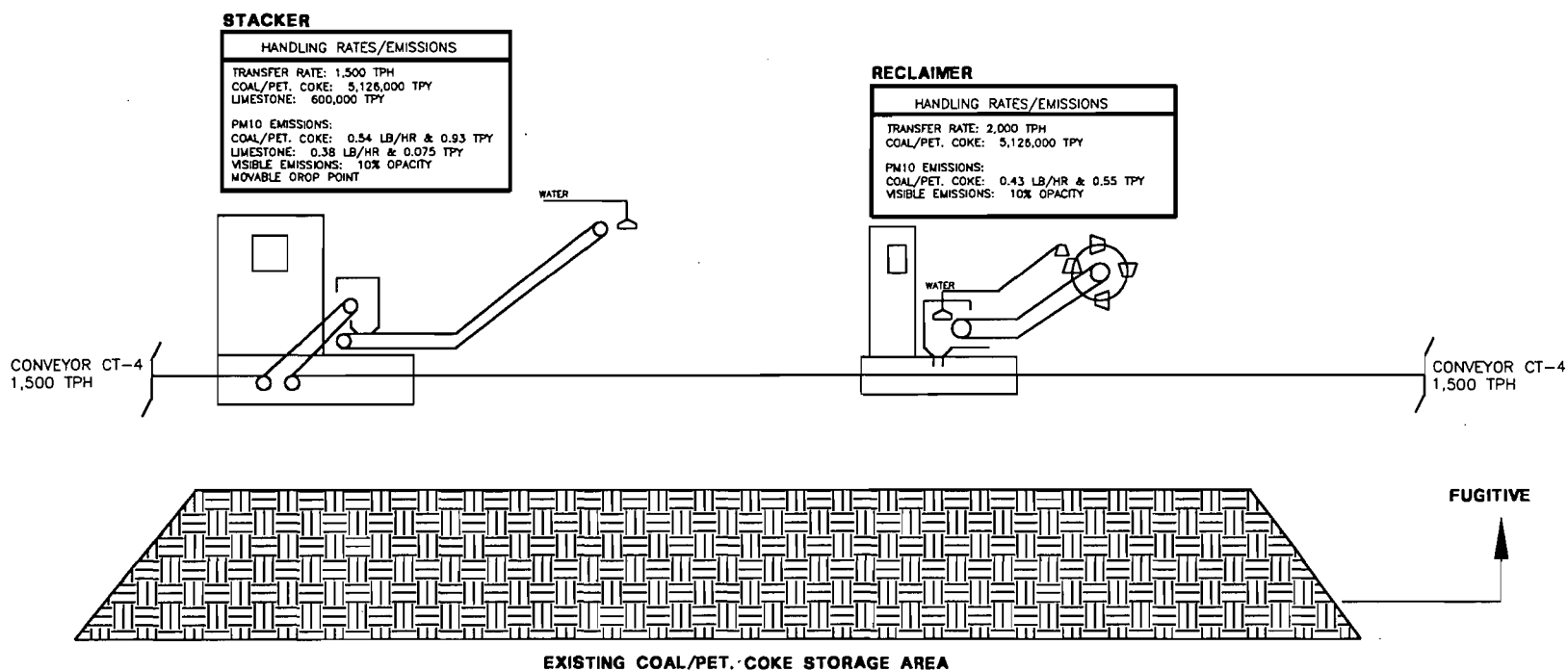
# ST JOHNS RIVER POWER PARK FUEL TRANSFER BUILDING ATTACHMENT EU023e-01c



NOTE: COVERS ON CONVEYORS

|                                                           |                                 |                   |                                                           |
|-----------------------------------------------------------|---------------------------------|-------------------|-----------------------------------------------------------|
| <b>JEA</b>                                                |                                 |                   |                                                           |
| ST JOHNS RIVER POWER PARK<br>PSD PERMIT UPDATE            |                                 |                   |                                                           |
| Simplified Process Flow Diagram<br>Emissions Unit ID 023e |                                 |                   |                                                           |
| <b>FOSTER WHEELER ENVIRONMENTAL CORPORATION</b>           |                                 |                   |                                                           |
| SCALE N/A                                                 | PREPARED<br>CHECKED<br>APPROVED | DJG<br>MAE<br>DJF | CAD FILE NO.<br>EU023ePFG.DWG<br>FIGURE NO.<br>EU023e-01c |
| DATE: 04/09/99                                            |                                 |                   |                                                           |

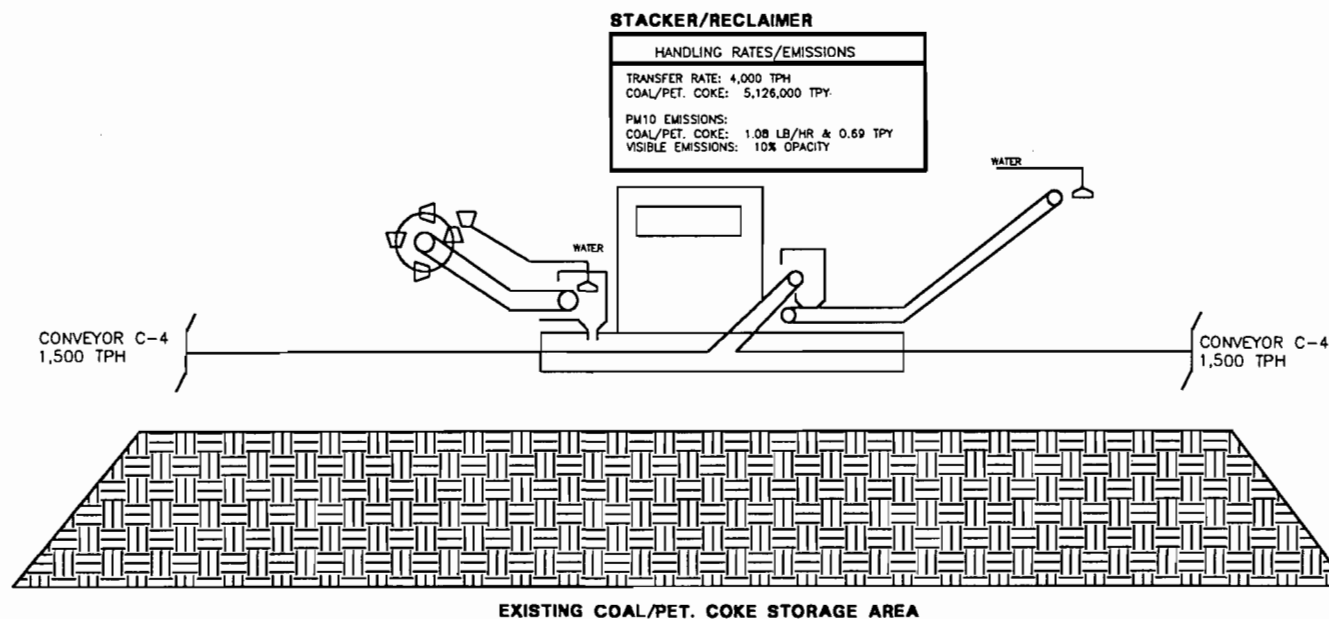
# ST JOHNS RIVER POWER PARK STACKER & RECLAIMER ATTACHMENT EU023f-01a



NOTE: WIND SCREENS ON CONVEYORS

|                                                 |              |                           |  |
|-------------------------------------------------|--------------|---------------------------|--|
| <b>JEA</b>                                      |              |                           |  |
| ST JOHNS RIVER POWER PARK<br>REPOWERING         |              |                           |  |
| Simplified Process Flow Diagram                 |              |                           |  |
| Emissions Unit ID 023f                          |              |                           |  |
| <b>FOSTER WHEELER ENVIRONMENTAL CORPORATION</b> |              |                           |  |
| SCALE N/A                                       | PREPARED DJG | CAD FILE NO. EU023fPE.dwg |  |
| DATE: 04/08/99                                  | CHECKED MAE  | FIGURE NO. EU023f-01a     |  |
|                                                 | APPROVED DJF |                           |  |

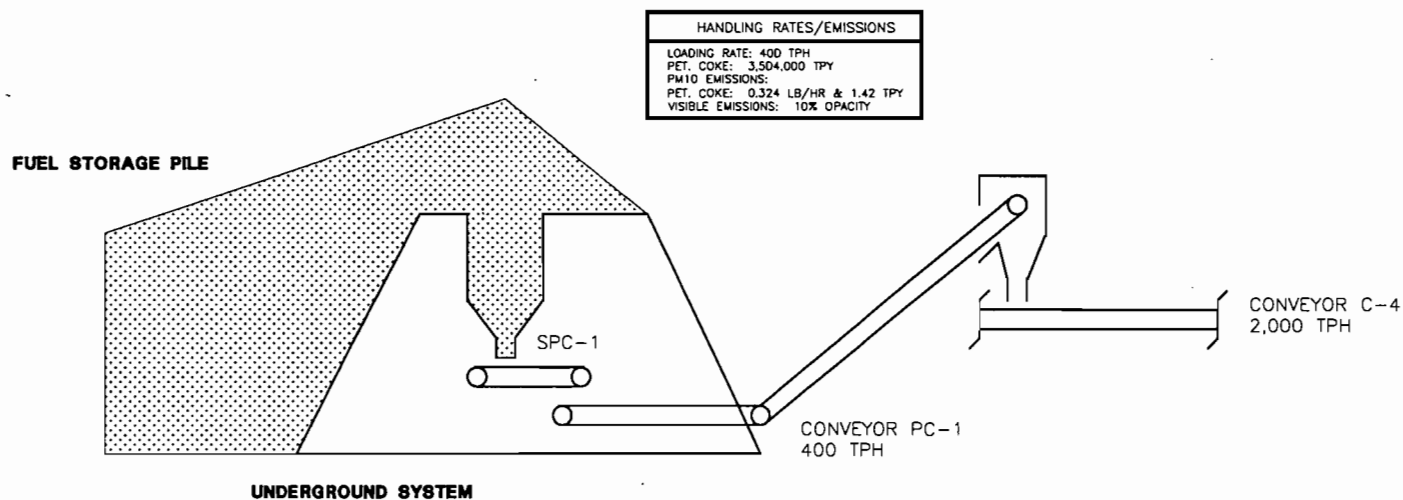
# ST JOHNS RIVER POWER PARK STACKER/RECLAIMER ATTACHMENT EU023f-01b



NOTE: WIND SCREENS ON CONVEYORS

|                                                           |              |                               |  |
|-----------------------------------------------------------|--------------|-------------------------------|--|
| <b>JEA</b>                                                |              |                               |  |
| ST JOHNS RIVER POWER PARK<br>REPOWERING                   |              |                               |  |
| Simplified Process Flow Diagram<br>Emissions Unit ID 023f |              |                               |  |
| <b>FOSTER WHEELER ENVIRONMENTAL CORPORATION</b>           |              |                               |  |
| SCALE N/A                                                 | PREPARED DJG | CAD FILE NO.<br>EU023fPFD.DWG |  |
| DATE: 04/08/99                                            | CHECKED MAE  | FIGURE NO.<br>EU023f-01b      |  |
|                                                           | APPROVED DJF |                               |  |

# ST JOHNS RIVER POWER PARK PETROLEUM COKE RECLAIM SYSTEM ATTACHMENT EU023g-01a

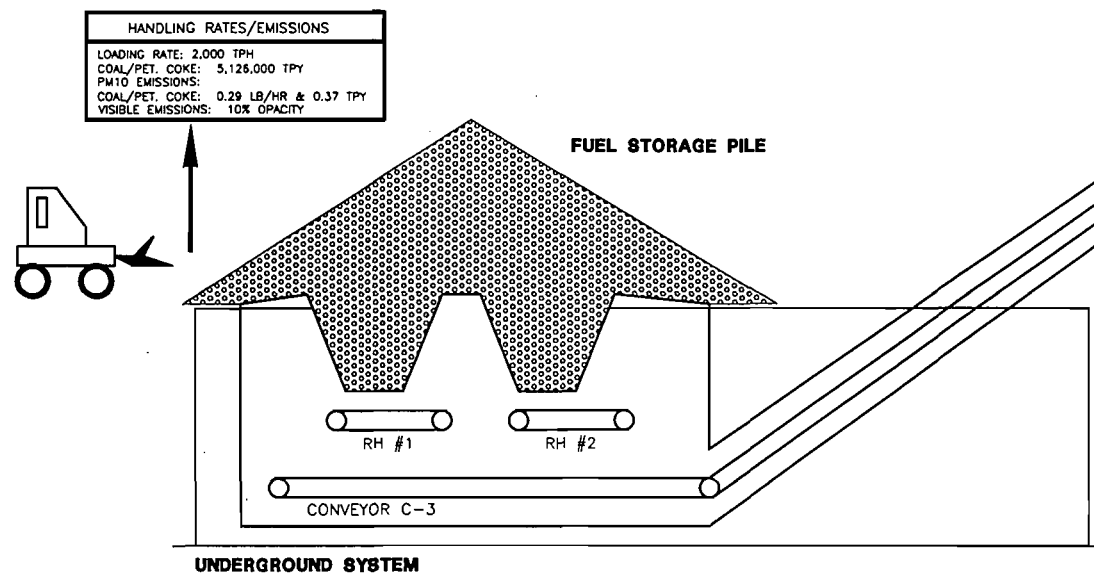


NOTE: COVERS ON CONVEYORS

**JEA**  
 ST JOHNS RIVER POWER PARK  
 PSD PERMIT UPDATE  
 Simplified Process Flow Diagram  
 Emissions Unit ID 023g

| FOSTER WHEELER ENVIRONMENTAL CORPORATION |               |                             |  |
|------------------------------------------|---------------|-----------------------------|--|
| SCALE: N/A                               | PREPARED: DJG | CAD FILE NO.: EU023gPFg.DWG |  |
| DATE: 04/08/99                           | CHECKED: MAE  | FIGURE NO.: EU023g-01a      |  |
|                                          | APPROVED: DJF |                             |  |

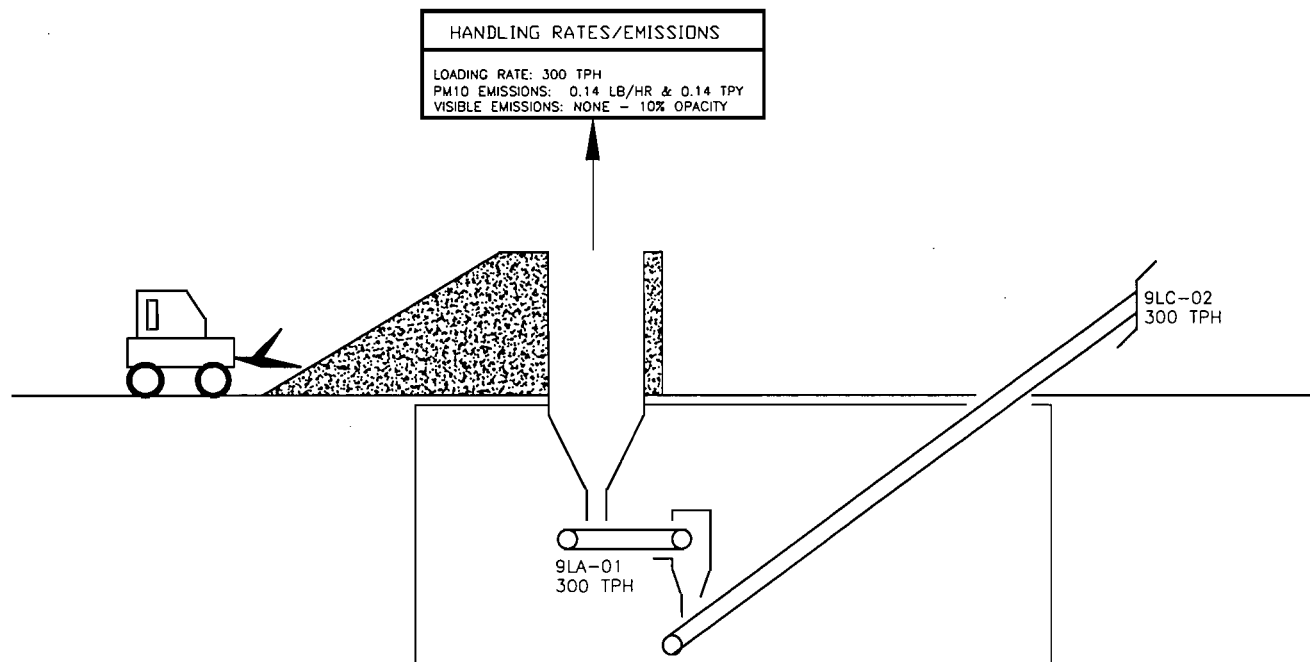
# ST JOHNS RIVER POWER PARK EMERGENCY RECLAIM HOPPERS ATTACHMENT EU023g-01b



NOTE: COVERS ON CONVEYORS

|                                                           |              |                               |  |
|-----------------------------------------------------------|--------------|-------------------------------|--|
| <b>JEA</b>                                                |              |                               |  |
| ST JOHNS RIVER POWER PARK<br>PSD PERMIT UPDATE            |              |                               |  |
| Simplified Process Flow Diagram<br>Emissions Unit ID 023g |              |                               |  |
| <b>FOSTER WHEELER ENVIRONMENTAL CORPORATION</b>           |              |                               |  |
| SCALE N/A                                                 | PREPARED DJG | CAD FILE NO.<br>EU023gPFD.DWG |  |
| DATE: 04/08/99                                            | CHECKED MAE  | FIGURE NO.<br>EU023g-01b      |  |
|                                                           | APPROVED DJF |                               |  |

**ST JOHNS RIVER POWER PARK  
LIMESTONE RECLAIM  
ATTACHMENT EU023g-01c**

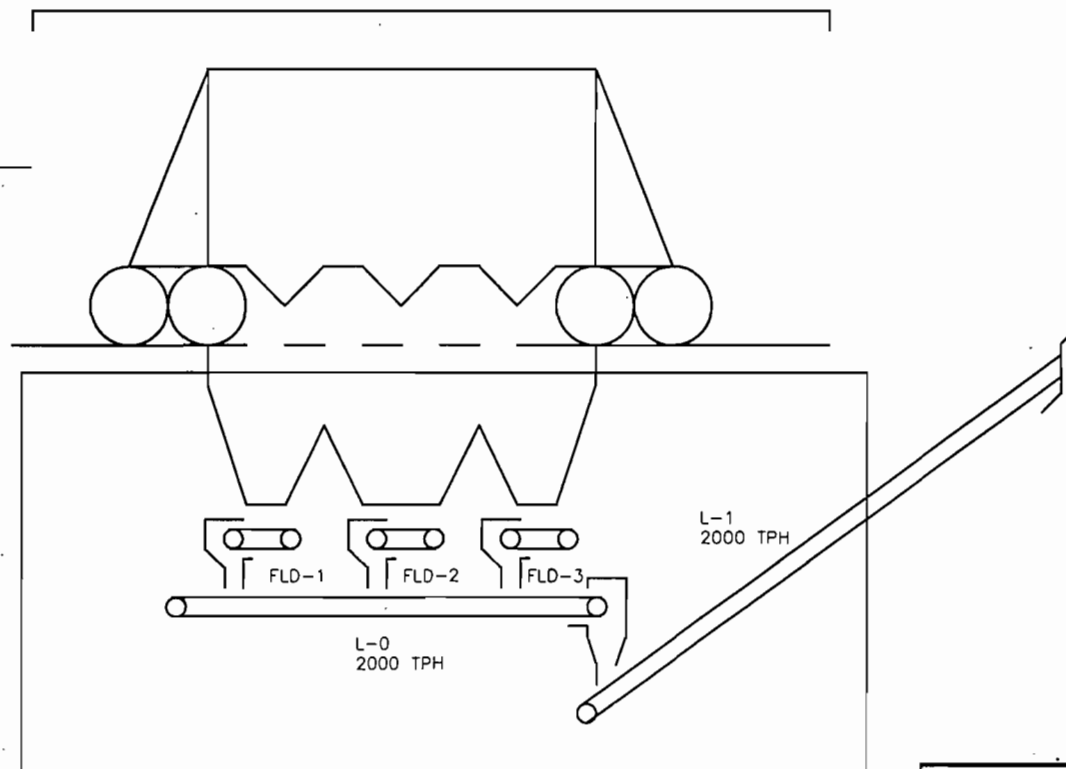


**UNDERGROUND TRANSFER SYSTEM**

|                                                           |                     |            |                               |
|-----------------------------------------------------------|---------------------|------------|-------------------------------|
| <b>JEA</b>                                                |                     |            |                               |
| ST JOHNS RIVER POWER PARK<br>PSD PERMIT UPDATE            |                     |            |                               |
| Simplified Process Flow Diagram<br>Emissions Unit ID 023g |                     |            |                               |
| <b>Foster Wheeler Environmental Corporation</b>           |                     |            |                               |
| SCALE N/A                                                 | PREPARED<br>CHECKED | DJG<br>MAE | CAD FILE NO.<br>EU023gPFC.DWG |
| DATE: 04/08/99                                            | APPROVED            | DJF        | FIGURE NO.<br>EU023g-01c      |

# ST JOHNS RIVER POWER PARK LIMESTONE RAILCAR DUMPER ATTACHMENT EU023h-01

| HANDLING RATES/EMISSIONS |                         |
|--------------------------|-------------------------|
| UNLOADING RATE:          | 10,000 TPD              |
| PM10 EMISSIONS:          | 0.005 LB/HR & 0.004 TPD |
| VISIBLE EMISSIONS:       | NONE - 10% OPACITY      |

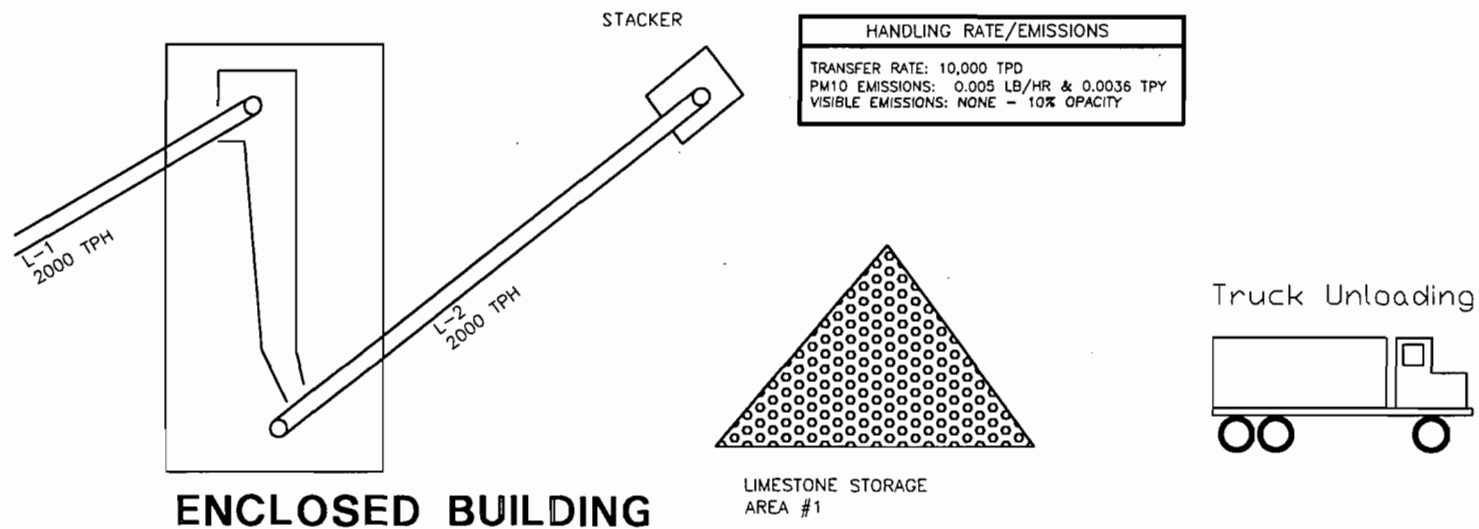


## UNDERGROUND TRANSFER SYSTEM

**JEA**  
ST JOHNS RIVER POWER PARK  
PSD PERMIT UPDATE  
Simplified Process Flow Diagram  
Emissions Unit ID 023h

|                                                 |               |                            |  |
|-------------------------------------------------|---------------|----------------------------|--|
| <b>FOSTER WHEELER ENVIRONMENTAL CORPORATION</b> |               |                            |  |
| SCALE: N/A                                      | PREPARED: DJG | CAD FILE NO.: EU023hPF.DWG |  |
| DATE: 04/08/99                                  | CHECKED: MAE  | FIGURE NO.: EU023h-01      |  |
|                                                 | APPROVED: DJF |                            |  |

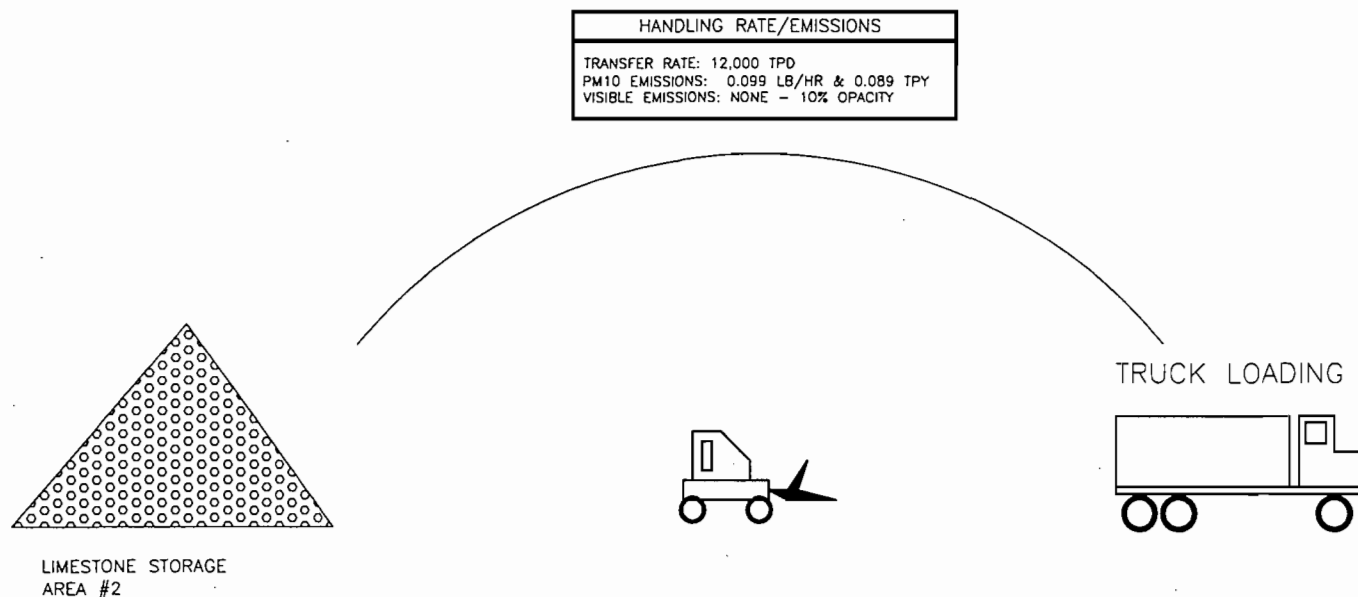
# ST JOHNS RIVER POWER PARK LIMESTONE LOADOUT ATTACHMENT EU023i-01



|                                                           |              |                              |  |
|-----------------------------------------------------------|--------------|------------------------------|--|
| <b>JEA</b>                                                |              |                              |  |
| ST JOHNS RIVER POWER PARK<br>PSD PERMIT UPDATE            |              |                              |  |
| Simplified Process Flow Diagram<br>Emissions Unit ID 023i |              |                              |  |
| <b>FOSTER WHEELER ENVIRONMENTAL CORPORATION</b>           |              |                              |  |
| SCALE N/A                                                 | PREPARED DJG | CAD FILE NO.<br>EU023iPF.DWG |  |
| DATE: 04/08/99                                            | CHECKED MAE  | FIGURE NO.<br>EU023i-01      |  |
|                                                           | APPROVED DJF |                              |  |

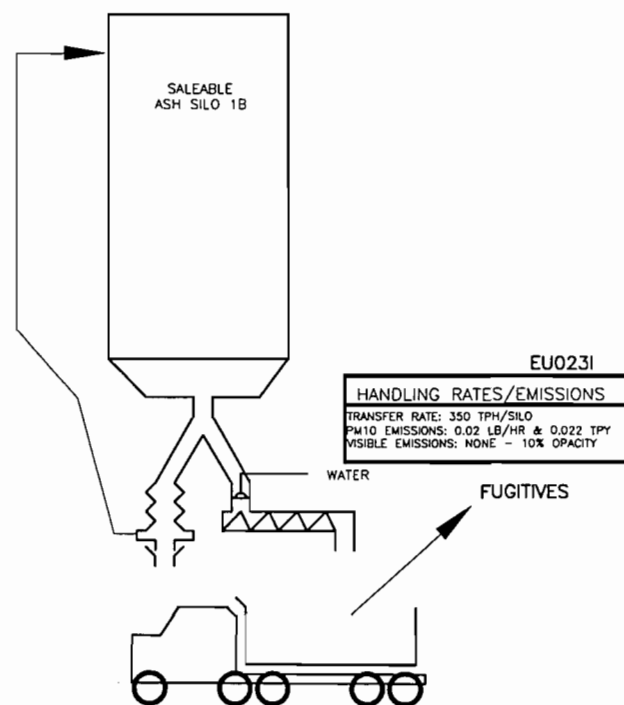
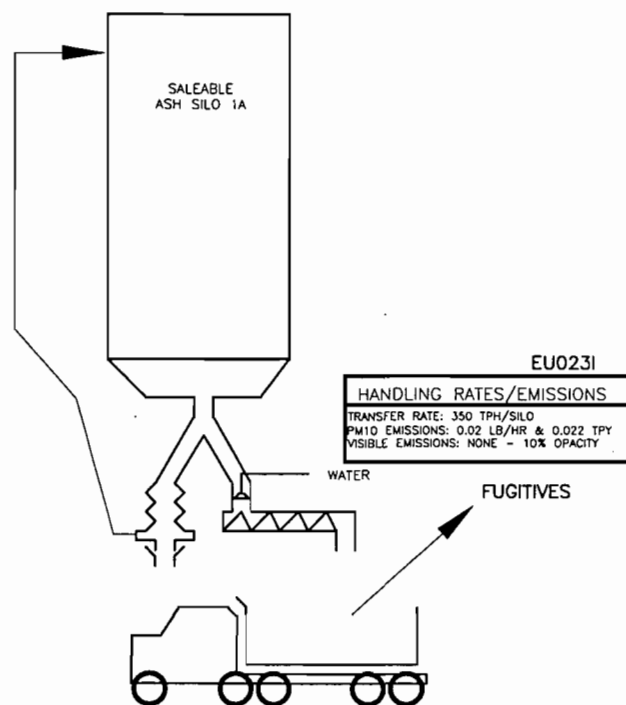


# ST JOHNS RIVER POWER PARK LIMESTONE TRUCK LOADOUT ATTACHMENT EU023j-01



|                                                           |              |                              |  |
|-----------------------------------------------------------|--------------|------------------------------|--|
| <b>JEA</b>                                                |              |                              |  |
| ST JOHNS POWER PARK<br>PSD PERMIT UPDATE                  |              |                              |  |
| Simplified Process Flow Diagram<br>Emissions Unit ID 023j |              |                              |  |
| <b>FOSTER WHEELER ENVIRONMENTAL CORPORATION</b>           |              |                              |  |
| SCALE N/A                                                 | PREPARED DJG | CAD FILE NO.<br>EU023jPF.DWG |  |
| DATE: 02/18/99                                            | CHECKED MAE  | FIGURE NO.<br>EU023j-01      |  |
|                                                           | APPROVED DJF |                              |  |

# ST JOHNS RIVER POWER PARK UNIT 1 SALEABLE ASH SILO LOADOUTS ATTACHMENT EU023I-01a

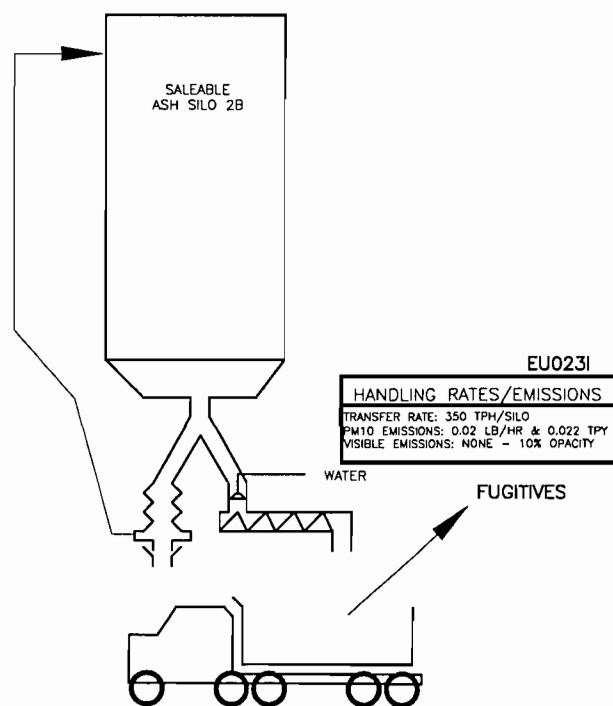
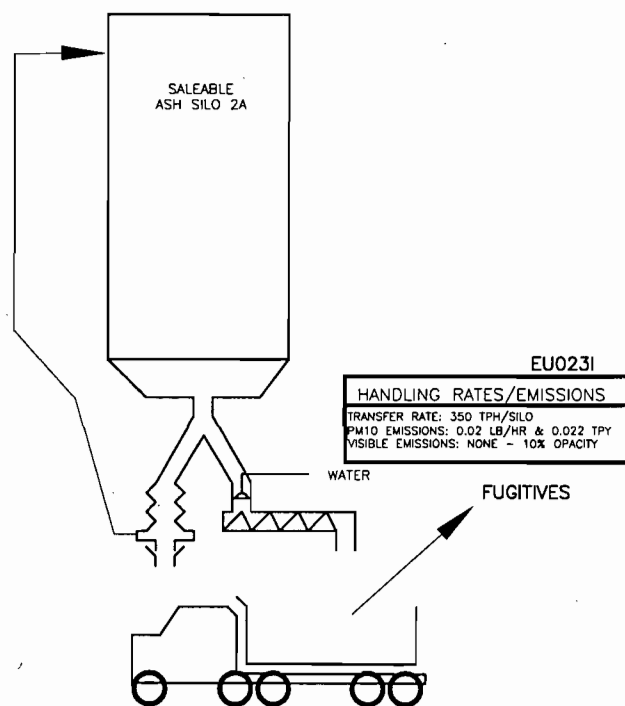


|                                                           |               |                             |  |
|-----------------------------------------------------------|---------------|-----------------------------|--|
| <b>JEA</b>                                                |               |                             |  |
| ST JOHNS RIVER POWER PARK<br>PSD PERMIT UPDATE            |               |                             |  |
| Simplified Process Flow Diagram<br>Emissions Unit ID 023I |               |                             |  |
| <b>FW FOSTER WHEELER ENVIRONMENTAL CORPORATION</b>        |               |                             |  |
| SCALE: N/A                                                | PREPARED: DJG | CAD FILE NO.: EU023IPFg.DWG |  |
| DATE: 04/08/99                                            | CHECKED: MAE  | FIGURE NO.: EU023I-01a      |  |
|                                                           | APPROVED: DJF |                             |  |

# ST JOHNS RIVER POWER PARK

## UNIT 2 SALEABLE ASH SILO LOADOUTS

### ATTACHMENT EU023I-01b

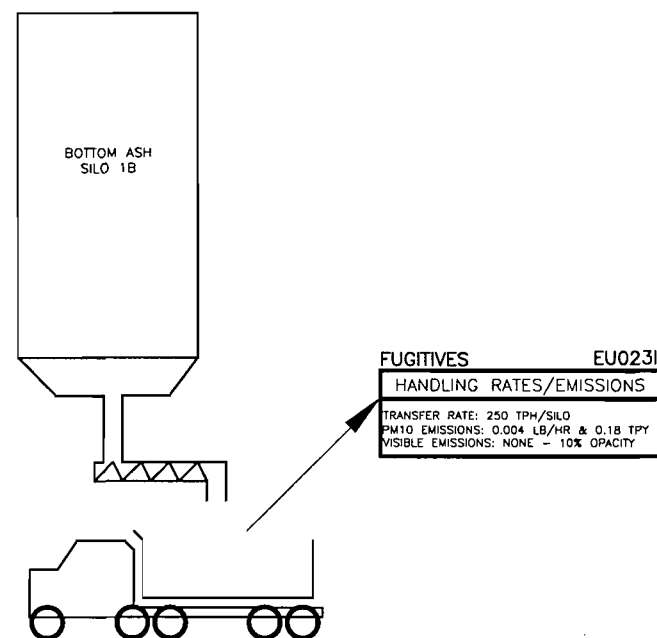
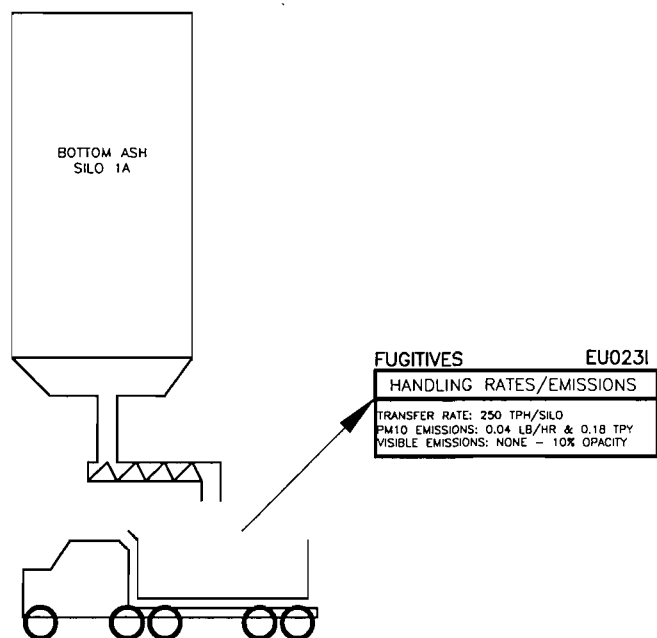


|                                                           |                                 |                   |                                                           |
|-----------------------------------------------------------|---------------------------------|-------------------|-----------------------------------------------------------|
| <b>JEA</b>                                                |                                 |                   |                                                           |
| ST JOHNS RIVER POWER PARK<br>PSD PERMIT UPDATE            |                                 |                   |                                                           |
| Simplified Process Flow Diagram<br>Emissions Unit ID 023I |                                 |                   |                                                           |
| <b>FOSTER WHEELER ENVIRONMENTAL CORPORATION</b>           |                                 |                   |                                                           |
| SCALE N/A                                                 | PREPARED<br>CHECKED<br>APPROVED | DJG<br>MAE<br>DJF | CAD FILE NO.<br>EU023IPFb.DWG<br>FIGURE NO.<br>EU023I-01b |
| DATE: 04/08/99                                            |                                 |                   |                                                           |

# ST JOHNS RIVER POWER PARK

## UNIT 1 BOTTOM ASH SILO LOADOUTS

### ATTACHMENT EU023L-01c

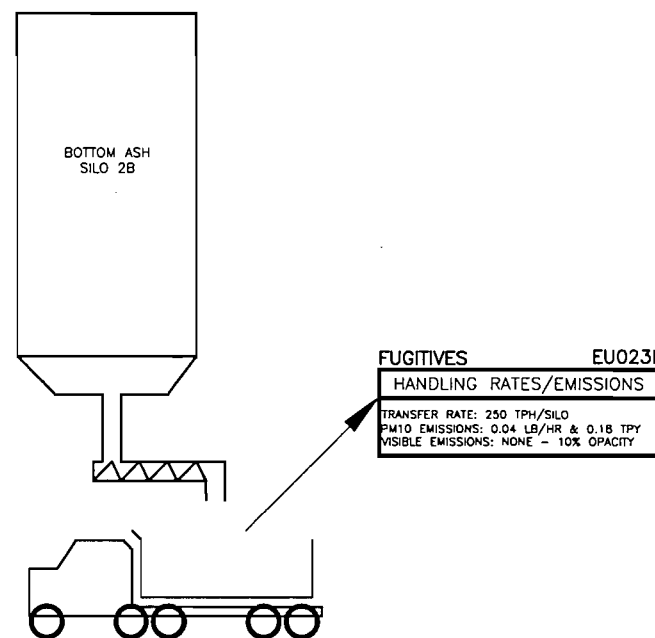
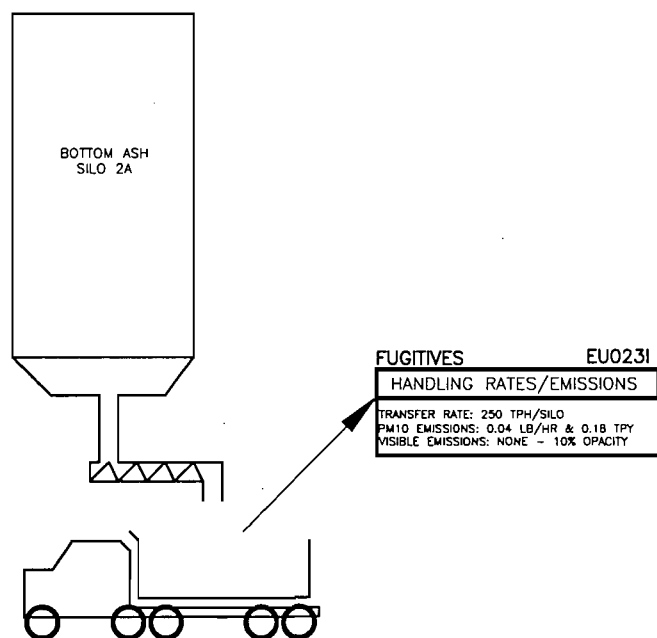


**JEA**  
 ST JOHNS RIVER POWER PARK  
 PSD PERMIT UPDATE  
 Simplified Process Flow Diagram  
 Emissions Unit ID 023I

**FW FOSTER WHEELER ENVIRONMENTAL CORPORATION**

|                |              |                            |
|----------------|--------------|----------------------------|
| SCALE N/A      | PREPARED DJG | CAD FILE NO. EU023IPFc.DWG |
| DATE: 04/08/99 | CHECKED MAE  | FIGURE NO. EU023I-01c      |
|                | APPROVED DJF |                            |

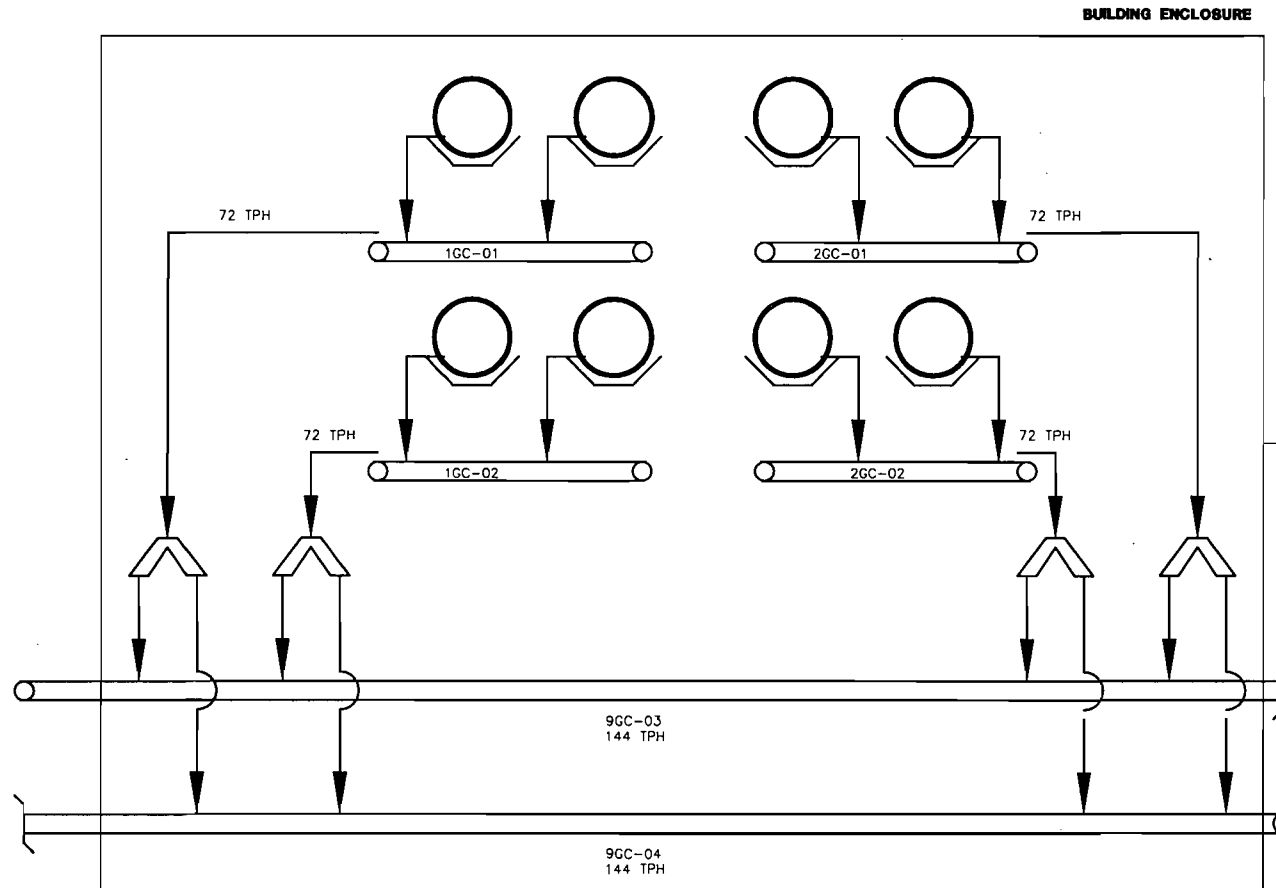
# ST JOHNS RIVER POWER PARK UNIT 2 BOTTOM ASH SILO LOADOUTS ATTACHMENT EU023I-01d



**JEA**  
ST JOHNS RIVER POWER PARK  
PSD PERMIT UPDATE  
Simplified Process Flow Diagram  
Emissions Unit ID 023I

| FOSTER WHEELER ENVIRONMENTAL CORPORATION |               |                              |  |
|------------------------------------------|---------------|------------------------------|--|
| SCALE: N/A                               | PREPARED: DJG | CAD FILE NO. EU023I(PFD.DWG) |  |
| DATE: 04/08/99                           | CHECKED: MAE  | FIGURE NO. EU023I-01d        |  |
|                                          | APPROVED: DJF |                              |  |

# ST JOHNS RIVER POWER PARK GYPSUM DEWATERING BUILDING ATTACHMENT EU023m-01



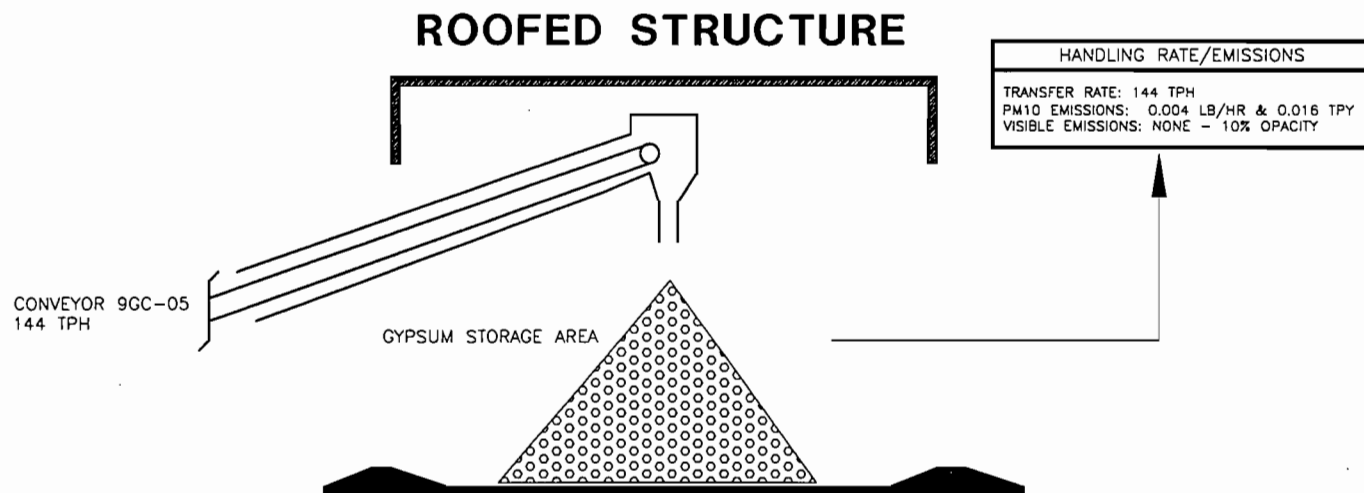
EU023m

| HANDLING RATES/EMISSIONS |                        |
|--------------------------|------------------------|
| TRANSFER RATE:           | 72 TPH/FILTER          |
| PM10 EMISSIONS:          | 0.02 LB/HR & 0.022 TPY |
| VISIBLE EMISSIONS:       | NONE - 10% OPACITY     |

**JEA**  
ST JOHNS RIVER POWER PARK  
PSD PERMIT UPDATE  
Simplified Process Flow Diagram  
Emissions Unit ID 023m

|                                                 |                                 |                   |                                                          |
|-------------------------------------------------|---------------------------------|-------------------|----------------------------------------------------------|
| <b>FOSTER WHEELER ENVIRONMENTAL CORPORATION</b> |                                 |                   |                                                          |
| SCALE N/A                                       | PREPARED<br>CHECKED<br>APPROVED | DJG<br>MAE<br>DJF | CAD FILE NO.<br>EU023mPfb.DWG<br>FIGURE NO.<br>EU023m-01 |
| DATE: 04/08/99                                  |                                 |                   |                                                          |

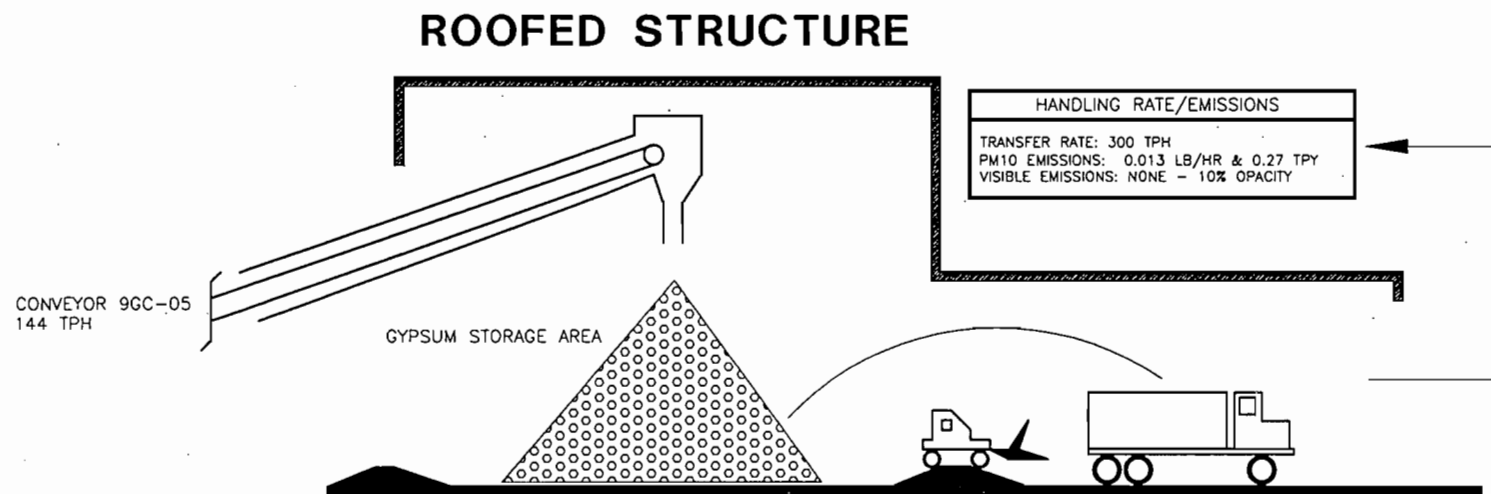
# ST JOHNS RIVER POWER PARK GYPSUM STORAGE AREA ATTACHMENT EU023o-01



**JEA**  
ST JOHNS RIVER POWER PARK  
PSD PERMIT UPDATE  
Simplified Process Flow Diagram  
Emissions Unit ID 023o

| FOSTER WHEELER ENVIRONMENTAL CORPORATION |              |                           |  |
|------------------------------------------|--------------|---------------------------|--|
| SCALE N/A                                | PREPARED DJG | CAD FILE NO. EU023oPF.DWG |  |
| DATE: 04/08/99                           | CHECKED MAE  | FIGURE NO. EU023o-01      |  |
|                                          | APPROVED DJF |                           |  |

# ST JOHNS RIVER POWER PARK GYPSUM TRUCK LOADOUT ATTACHMENT EU023p-01



**JEA**  
ST JOHNS RIVER POWER PARK  
PSD PERMIT UPDATE

Simplified Process Flow Diagram  
Emissions Unit ID 023p

**F** FOSTER WHEELER ENVIRONMENTAL CORPORATION

|                |               |                            |
|----------------|---------------|----------------------------|
| SCALE: N/A     | PREPARED: DJG | CAD FILE NO.: EU023pPF.DWG |
| DATE: 04/08/99 | CHECKED: MAE  | FIGURE NO.: EU023p-01      |
|                | APPROVED: DJF |                            |



**EMISSIONS UNIT EU023**  
**Materials Handling & Storage Operations**

**ATTACHMENT EU023-02**  
**Control Equipment Description**

**EMISSIONS UNIT EU023**  
**Materials Handling & Storage Operations**

**ATTACHMENT EU023-03**  
**Compliance Test Report**

## **Emissions Unit EU023**

### **Materials Handling & Storage Operations**

#### **Control Equipment Descriptions**

Emissions of particulate matter from materials handling and storage operations are controlled by various techniques and strategies which have been identified on Figure SJRPP01. These techniques and strategies include the following:

1. **Conditioned Materials** - This technique addresses materials with moisture contents greater than 3.5 percent when handling and storage. The technique addresses the moisture variable within the wind erosion equation. By increasing moisture content, the emission potential is reduced.
2. **Wet Suppression** - For some materials the direct application of water and/or chemicals for purposes of increasing moisture contents and/or stabilizing small particles is possible. Following the application of the wetting agents the materials are considered "Conditioned" for purposes of controls.
3. **Water Sprays** - For some materials, the indirect application of water for purposes of knocking down fugitive dust once it is released from the operation is possible. This technique is applied to enhance control efficiency over that which can be obtained by the handling of conditioned materials and/or use of wet suppression.
4. **Enclosures** - For certain operations, either total or partial enclosures, or wind breaks/guards can be used to reduce or eliminate particulate emissions or causes of such emissions. When used in conjunction with conditioned materials and water sprays, the overall control efficiency can be greatly increased.
5. **Best Operating Practices** - This technique focuses on design features and operating practices to reduce or eliminate the causes of fugitive dust emissions.

The application of each control strategy for the different operations is presented on Figure SJRPP01.

TEST SERIES #1 - COLOMBIAN COAL

|                                                                                                |  |  |  |                                                                                                                                       |  |  |  |                                  |  |  |  |                   |  |  |  |
|------------------------------------------------------------------------------------------------|--|--|--|---------------------------------------------------------------------------------------------------------------------------------------|--|--|--|----------------------------------|--|--|--|-------------------|--|--|--|
| SOURCE NAME<br>ST. JOHNS RIVER COAL TERMINAL                                                   |  |  |  | OBSERVATION DATE<br>2/12/89                                                                                                           |  |  |  | START TIME<br>1440               |  |  |  | STOP TIME<br>1610 |  |  |  |
| ADDRESS<br>6020 WILLIAM MILLS ST.                                                              |  |  |  | SEC<br>MIN 0 15 30 45                                                                                                                 |  |  |  | SEC<br>MIN 0 15 30 45            |  |  |  |                   |  |  |  |
| CITY<br>JACKSONVILLE                                                                           |  |  |  | STATE<br>FL                                                                                                                           |  |  |  | ZIP<br>32226                     |  |  |  |                   |  |  |  |
| PHONE<br>904-751-7729                                                                          |  |  |  | SOURCE ID NUMBER<br>HOPPER-WET                                                                                                        |  |  |  |                                  |  |  |  |                   |  |  |  |
| PROCESS EQUIPMENT<br>SHIP UNLOADER                                                             |  |  |  | OPERATING MODE<br>NORMAL                                                                                                              |  |  |  |                                  |  |  |  |                   |  |  |  |
| CONTROL EQUIPMENT<br>WET SUPPRESSION SYS.                                                      |  |  |  | OPERATING MODE<br>NORMAL                                                                                                              |  |  |  |                                  |  |  |  |                   |  |  |  |
| DESCRIBE EMISSION POINT 40' x 40' OPENING                                                      |  |  |  |                                                                                                                                       |  |  |  |                                  |  |  |  |                   |  |  |  |
| START                                                                                          |  |  |  | STOP                                                                                                                                  |  |  |  |                                  |  |  |  |                   |  |  |  |
| HEIGHT ABOVE GROUND LEVEL<br>START 80' STOP ✓                                                  |  |  |  | HEIGHT RELATIVE TO OBSERVER<br>START 50' STOP ✓                                                                                       |  |  |  |                                  |  |  |  |                   |  |  |  |
| DISTANCE FROM OBSERVER<br>START 80' STOP ✓                                                     |  |  |  | DIRECTION FROM OBSERVER<br>START N STOP ✓                                                                                             |  |  |  |                                  |  |  |  |                   |  |  |  |
| DESCRIBE EMISSIONS<br>START NONE STOP                                                          |  |  |  |                                                                                                                                       |  |  |  |                                  |  |  |  |                   |  |  |  |
| EMISSION COLOR<br>START STOP                                                                   |  |  |  | PLUME TYPE: CONTINUOUS <input type="checkbox"/><br>FUGITIVE <input checked="" type="checkbox"/> INTERMITTENT <input type="checkbox"/> |  |  |  |                                  |  |  |  |                   |  |  |  |
| WATER DROPLETS PRESENT:<br>NO <input checked="" type="checkbox"/> YES <input type="checkbox"/> |  |  |  | IF WATER DROPLET PLUME<br>ATTACHED <input type="checkbox"/> DETACHED <input type="checkbox"/>                                         |  |  |  |                                  |  |  |  |                   |  |  |  |
| POINT IN THE PLUME AT WHICH OPACITY WAS DETERMINED<br>START 3' ABOVE HOPPER STOP               |  |  |  |                                                                                                                                       |  |  |  |                                  |  |  |  |                   |  |  |  |
| DESCRIBE BACKGROUND<br>START SKY STOP ✓                                                        |  |  |  |                                                                                                                                       |  |  |  |                                  |  |  |  |                   |  |  |  |
| BACKGROUND COLOR<br>START BLUE STOP ✓                                                          |  |  |  | SKY CONDITIONS<br>START CLEAR STOP ✓                                                                                                  |  |  |  |                                  |  |  |  |                   |  |  |  |
| WIND SPEED<br>START 5-10 mph STOP ✓                                                            |  |  |  | WIND DIRECTION<br>START NE STOP ✓                                                                                                     |  |  |  |                                  |  |  |  |                   |  |  |  |
| AMBIENT TEMP<br>START 71°F STOP ✓                                                              |  |  |  | WET BULB TEMP.<br>56°F                                                                                                                |  |  |  | RH, percent<br>40%               |  |  |  |                   |  |  |  |
| <p>Source Layout Sketch</p>                                                                    |  |  |  | 1                                                                                                                                     |  |  |  | 31                               |  |  |  |                   |  |  |  |
|                                                                                                |  |  |  | 2                                                                                                                                     |  |  |  | 32                               |  |  |  |                   |  |  |  |
|                                                                                                |  |  |  | 3                                                                                                                                     |  |  |  | 33                               |  |  |  |                   |  |  |  |
|                                                                                                |  |  |  | 4                                                                                                                                     |  |  |  | 34                               |  |  |  |                   |  |  |  |
|                                                                                                |  |  |  | 5                                                                                                                                     |  |  |  | 35                               |  |  |  |                   |  |  |  |
|                                                                                                |  |  |  | 6                                                                                                                                     |  |  |  | 36                               |  |  |  |                   |  |  |  |
|                                                                                                |  |  |  | 7                                                                                                                                     |  |  |  | 37                               |  |  |  |                   |  |  |  |
|                                                                                                |  |  |  | 8                                                                                                                                     |  |  |  | 38                               |  |  |  |                   |  |  |  |
|                                                                                                |  |  |  | 9                                                                                                                                     |  |  |  | 39                               |  |  |  |                   |  |  |  |
|                                                                                                |  |  |  | 10                                                                                                                                    |  |  |  | 40                               |  |  |  |                   |  |  |  |
| 11                                                                                             |  |  |  | 41                                                                                                                                    |  |  |  |                                  |  |  |  |                   |  |  |  |
| 12                                                                                             |  |  |  | 42                                                                                                                                    |  |  |  |                                  |  |  |  |                   |  |  |  |
| 13                                                                                             |  |  |  | 43                                                                                                                                    |  |  |  |                                  |  |  |  |                   |  |  |  |
| 14                                                                                             |  |  |  | 44                                                                                                                                    |  |  |  |                                  |  |  |  |                   |  |  |  |
| 15                                                                                             |  |  |  | 45                                                                                                                                    |  |  |  |                                  |  |  |  |                   |  |  |  |
| 16                                                                                             |  |  |  | 46                                                                                                                                    |  |  |  |                                  |  |  |  |                   |  |  |  |
| 17                                                                                             |  |  |  | 47                                                                                                                                    |  |  |  |                                  |  |  |  |                   |  |  |  |
| 18                                                                                             |  |  |  | 48                                                                                                                                    |  |  |  |                                  |  |  |  |                   |  |  |  |
| 19                                                                                             |  |  |  | 49                                                                                                                                    |  |  |  |                                  |  |  |  |                   |  |  |  |
| 20                                                                                             |  |  |  | 50                                                                                                                                    |  |  |  |                                  |  |  |  |                   |  |  |  |
| 21                                                                                             |  |  |  | 51                                                                                                                                    |  |  |  |                                  |  |  |  |                   |  |  |  |
| 22                                                                                             |  |  |  | 52                                                                                                                                    |  |  |  |                                  |  |  |  |                   |  |  |  |
| 23                                                                                             |  |  |  | 53                                                                                                                                    |  |  |  |                                  |  |  |  |                   |  |  |  |
| 24                                                                                             |  |  |  | 54                                                                                                                                    |  |  |  |                                  |  |  |  |                   |  |  |  |
| 25                                                                                             |  |  |  | 55                                                                                                                                    |  |  |  |                                  |  |  |  |                   |  |  |  |
| 26                                                                                             |  |  |  | 56                                                                                                                                    |  |  |  |                                  |  |  |  |                   |  |  |  |
| 27                                                                                             |  |  |  | 57                                                                                                                                    |  |  |  |                                  |  |  |  |                   |  |  |  |
| 28                                                                                             |  |  |  | 58                                                                                                                                    |  |  |  |                                  |  |  |  |                   |  |  |  |
| 29                                                                                             |  |  |  | 59                                                                                                                                    |  |  |  |                                  |  |  |  |                   |  |  |  |
| 30                                                                                             |  |  |  | 60                                                                                                                                    |  |  |  |                                  |  |  |  |                   |  |  |  |
| AVERAGE OPACITY FOR HIGHEST PERIOD                                                             |  |  |  | 0%                                                                                                                                    |  |  |  | NUMBER OF READINGS ABOVE 0% WERE |  |  |  | 0                 |  |  |  |
| RANGE OF OPACITY READINGS                                                                      |  |  |  | MINIMUM 0                                                                                                                             |  |  |  | MAXIMUM 0                        |  |  |  |                   |  |  |  |
| OBSERVER'S NAME (PRINT)                                                                        |  |  |  | THERESA A. BARNARD                                                                                                                    |  |  |  |                                  |  |  |  |                   |  |  |  |
| OBSERVER'S SIGNATURE                                                                           |  |  |  | Theresa A. Barnard                                                                                                                    |  |  |  | DATE                             |  |  |  | 2/12/89           |  |  |  |
| ORGANIZATION                                                                                   |  |  |  | HUNTER/ESE                                                                                                                            |  |  |  |                                  |  |  |  |                   |  |  |  |
| I HAVE RECEIVED A COPY OF THESE OPACITY OBSERVATIONS                                           |  |  |  | CERTIFIED BY                                                                                                                          |  |  |  | EASTERN TECH. ASSOC.             |  |  |  | DATE              |  |  |  |
| SIGNATURE                                                                                      |  |  |  |                                                                                                                                       |  |  |  |                                  |  |  |  | 11/30/88          |  |  |  |
| TITLE                                                                                          |  |  |  |                                                                                                                                       |  |  |  | VERIFIED BY                      |  |  |  | DATE              |  |  |  |

| SOURCE NAME                                                         |  |  |  | OBSERVATION DATE                              |   |    |    | START TIME |     |   |    | STOP TIME |    |  |  |
|---------------------------------------------------------------------|--|--|--|-----------------------------------------------|---|----|----|------------|-----|---|----|-----------|----|--|--|
| ST. JOHNS RIVER COAL TERMINAL                                       |  |  |  | 2/12/89                                       |   |    |    | 1100       |     |   |    | 1130      |    |  |  |
| ADDRESS                                                             |  |  |  | SEC                                           |   |    |    | SEC        |     |   |    |           |    |  |  |
| 6020 WILLIAM MILLS ST.                                              |  |  |  | MIN                                           | 0 | 15 | 30 | 45         | MIN | 0 | 15 | 30        | 45 |  |  |
|                                                                     |  |  |  | 1                                             | 0 | 0  | 0  | 0          | 31  |   |    |           |    |  |  |
| CITY                                                                |  |  |  | 2                                             | 0 | 0  | 0  | 0          | 32  |   |    |           |    |  |  |
| JACKSONVILLE                                                        |  |  |  | 3                                             | 0 | 0  | 0  | 0          | 33  |   |    |           |    |  |  |
| STATE                                                               |  |  |  | 4                                             | 0 | 0  | 0  | 0          | 34  |   |    |           |    |  |  |
| FL                                                                  |  |  |  | 5                                             | 0 | 0  | 0  | 0          | 35  |   |    |           |    |  |  |
| ZIP                                                                 |  |  |  | 6                                             | 0 | 0  | 0  | 0          | 36  |   |    |           |    |  |  |
| 32226                                                               |  |  |  | 7                                             | 0 | 0  | 0  | 0          | 37  |   |    |           |    |  |  |
| PHONE                                                               |  |  |  | 8                                             | 0 | 0  | 0  | 0          | 38  |   |    |           |    |  |  |
| 904-751-7729                                                        |  |  |  | 9                                             | 0 | 0  | 0  | 0          | 39  |   |    |           |    |  |  |
| SOURCE ID NUMBER                                                    |  |  |  | 10                                            | 0 | 0  | 0  | 0          | 40  |   |    |           |    |  |  |
| (2)                                                                 |  |  |  | 11                                            | 0 | 0  | 0  | 0          | 41  |   |    |           |    |  |  |
| TRANSFER STN #1                                                     |  |  |  | 12                                            | 0 | 0  | 0  | 0          | 42  |   |    |           |    |  |  |
| PROCESS EQUIPMENT                                                   |  |  |  | 13                                            | 0 | 0  | 0  | 0          | 43  |   |    |           |    |  |  |
| COKE CONVEYOR                                                       |  |  |  | 14                                            | 0 | 0  | 0  | 0          | 44  |   |    |           |    |  |  |
| TRANSFER STATION                                                    |  |  |  | 15                                            | 0 | 0  | 0  | 0          | 45  |   |    |           |    |  |  |
| OPERATING MODE                                                      |  |  |  | 16                                            | 0 | 0  | 0  | 0          | 46  |   |    |           |    |  |  |
| NORMAL                                                              |  |  |  | 17                                            | 0 | 0  | 0  | 0          | 47  |   |    |           |    |  |  |
| CONTROL EQUIPMENT                                                   |  |  |  | 18                                            | 0 | 0  | 0  | 0          | 48  |   |    |           |    |  |  |
| WET SUPPRESSION/EXHAUST                                             |  |  |  | 19                                            | 0 | 0  | 0  | 0          | 49  |   |    |           |    |  |  |
| OPERATING MODE                                                      |  |  |  | 20                                            | 0 | 0  | 0  | 0          | 50  |   |    |           |    |  |  |
| NORMAL                                                              |  |  |  | 21                                            | 0 | 0  | 0  | 0          | 51  |   |    |           |    |  |  |
| DESCRIBE EMISSION POINT                                             |  |  |  | 22                                            | 0 | 0  | 0  | 0          | 52  |   |    |           |    |  |  |
| START STOP                                                          |  |  |  | 23                                            | 0 | 0  | 0  | 0          | 53  |   |    |           |    |  |  |
| HEIGHT ABOVE GROUND LEVEL                                           |  |  |  | 24                                            | 0 | 0  | 0  | 0          | 54  |   |    |           |    |  |  |
| START 30' STOP ✓                                                    |  |  |  | 25                                            | 0 | 0  | 0  | 0          | 55  |   |    |           |    |  |  |
| HEIGHT RELATIVE TO OBSERVER                                         |  |  |  | 26                                            | 0 | 0  | 0  | 0          | 56  |   |    |           |    |  |  |
| START 30' STOP ✓                                                    |  |  |  | 27                                            | 0 | 0  | 0  | 0          | 57  |   |    |           |    |  |  |
| DISTANCE FROM OBSERVER                                              |  |  |  | 28                                            | 0 | 0  | 0  | 0          | 58  |   |    |           |    |  |  |
| START 70' STOP ✓                                                    |  |  |  | 29                                            | 0 | 0  | 0  | 0          | 59  |   |    |           |    |  |  |
| DIRECTION FROM OBSERVER                                             |  |  |  | 30                                            | 0 | 0  | 0  | 0          | 60  |   |    |           |    |  |  |
| START NE STOP ✓                                                     |  |  |  |                                               |   |    |    |            |     |   |    |           |    |  |  |
| DESCRIBE EMISSIONS                                                  |  |  |  |                                               |   |    |    |            |     |   |    |           |    |  |  |
| START NONE STOP                                                     |  |  |  |                                               |   |    |    |            |     |   |    |           |    |  |  |
| EMISSION COLOR                                                      |  |  |  |                                               |   |    |    |            |     |   |    |           |    |  |  |
| START STOP                                                          |  |  |  |                                               |   |    |    |            |     |   |    |           |    |  |  |
| PLUME TYPE CONTINUOUS <input type="checkbox"/>                      |  |  |  |                                               |   |    |    |            |     |   |    |           |    |  |  |
| FUGITIVE/INTERMITTENT <input type="checkbox"/>                      |  |  |  |                                               |   |    |    |            |     |   |    |           |    |  |  |
| WATER DROPLETS PRESENT                                              |  |  |  |                                               |   |    |    |            |     |   |    |           |    |  |  |
| NO <input checked="" type="checkbox"/> YES <input type="checkbox"/> |  |  |  |                                               |   |    |    |            |     |   |    |           |    |  |  |
| IF WATER DROPLET PLUME                                              |  |  |  |                                               |   |    |    |            |     |   |    |           |    |  |  |
| ATTACHED <input type="checkbox"/> DETACHED <input type="checkbox"/> |  |  |  |                                               |   |    |    |            |     |   |    |           |    |  |  |
| POINT IN THE PLUME AT WHICH OPACITY WAS DETERMINED                  |  |  |  |                                               |   |    |    |            |     |   |    |           |    |  |  |
| START 1' ABOVE TRANSFER STOP                                        |  |  |  |                                               |   |    |    |            |     |   |    |           |    |  |  |
| DESCRIBE BACKGROUND                                                 |  |  |  |                                               |   |    |    |            |     |   |    |           |    |  |  |
| START SKY STOP ✓                                                    |  |  |  |                                               |   |    |    |            |     |   |    |           |    |  |  |
| BACKGROUND COLOR                                                    |  |  |  |                                               |   |    |    |            |     |   |    |           |    |  |  |
| START BLUE STOP ✓                                                   |  |  |  |                                               |   |    |    |            |     |   |    |           |    |  |  |
| SKY CONDITIONS                                                      |  |  |  |                                               |   |    |    |            |     |   |    |           |    |  |  |
| START CLEAR STOP ✓                                                  |  |  |  |                                               |   |    |    |            |     |   |    |           |    |  |  |
| WIND SPEED                                                          |  |  |  |                                               |   |    |    |            |     |   |    |           |    |  |  |
| START 5-10 MPH STOP ✓                                               |  |  |  |                                               |   |    |    |            |     |   |    |           |    |  |  |
| WIND DIRECTION                                                      |  |  |  |                                               |   |    |    |            |     |   |    |           |    |  |  |
| START NE STOP ✓                                                     |  |  |  |                                               |   |    |    |            |     |   |    |           |    |  |  |
| AMBIENT TEMP.                                                       |  |  |  |                                               |   |    |    |            |     |   |    |           |    |  |  |
| START 63°F STOP ✓                                                   |  |  |  |                                               |   |    |    |            |     |   |    |           |    |  |  |
| WET BULB TEMP.                                                      |  |  |  |                                               |   |    |    |            |     |   |    |           |    |  |  |
| 50°F                                                                |  |  |  |                                               |   |    |    |            |     |   |    |           |    |  |  |
| RH, percent                                                         |  |  |  |                                               |   |    |    |            |     |   |    |           |    |  |  |
| 40%                                                                 |  |  |  |                                               |   |    |    |            |     |   |    |           |    |  |  |
| <p>Source Layout Sketch</p>                                         |  |  |  | AVERAGE OPACITY FOR HIGHEST PERIOD 0%         |   |    |    |            |     |   |    |           |    |  |  |
|                                                                     |  |  |  | NUMBER OF READINGS ABOVE 0% WERE 0            |   |    |    |            |     |   |    |           |    |  |  |
|                                                                     |  |  |  | RANGE OF OPACITY READINGS MINIMUM 0 MAXIMUM 0 |   |    |    |            |     |   |    |           |    |  |  |
|                                                                     |  |  |  | OBSERVER'S NAME (PRINT) THERESA A. BARWARD    |   |    |    |            |     |   |    |           |    |  |  |
|                                                                     |  |  |  | OBSERVER'S SIGNATURE Theresa A. Barward       |   |    |    |            |     |   |    |           |    |  |  |
|                                                                     |  |  |  | DATE 2/12/89                                  |   |    |    |            |     |   |    |           |    |  |  |
|                                                                     |  |  |  | ORGANIZATION HUNTER ESE                       |   |    |    |            |     |   |    |           |    |  |  |
|                                                                     |  |  |  | CERTIFIED BY EASTERN TECH. ASSOC.             |   |    |    |            |     |   |    |           |    |  |  |
|                                                                     |  |  |  | DATE 11/30/88                                 |   |    |    |            |     |   |    |           |    |  |  |
|                                                                     |  |  |  | VERIFIED BY                                   |   |    |    |            |     |   |    |           |    |  |  |
| DATE                                                                |  |  |  |                                               |   |    |    |            |     |   |    |           |    |  |  |
| COMMENTS FROM SOUTH SIDE OF TRANSFER STATION                        |  |  |  |                                               |   |    |    |            |     |   |    |           |    |  |  |
| HAVE RECEIVED A COPY OF THESE OPACITY OBSERVATIONS                  |  |  |  |                                               |   |    |    |            |     |   |    |           |    |  |  |
| SIGNATURE                                                           |  |  |  |                                               |   |    |    |            |     |   |    |           |    |  |  |
| TITLE                                                               |  |  |  |                                               |   |    |    |            |     |   |    |           |    |  |  |
| DATE                                                                |  |  |  |                                               |   |    |    |            |     |   |    |           |    |  |  |

[illegible]

|                                                                                                                                                              |  |  |                                                                                                      |  |                                                                                                                                   |    |                                  |    |                          |  |    |    |    |    |
|--------------------------------------------------------------------------------------------------------------------------------------------------------------|--|--|------------------------------------------------------------------------------------------------------|--|-----------------------------------------------------------------------------------------------------------------------------------|----|----------------------------------|----|--------------------------|--|----|----|----|----|
| SOURCE NAME<br><b>COAL TERMINAL</b><br><b>ST JOHNS RIVER POWER PARK NC.</b>                                                                                  |  |  | OBSERVATION DATE<br><b>12 FEB. 89</b>                                                                |  |                                                                                                                                   |    | START TIME<br><b>0855</b>        |    | STOP TIME<br><b>1009</b> |  |    |    |    |    |
| ADDRESS<br><b>6020 WILLIAM MILLS ST.</b>                                                                                                                     |  |  | SEC<br>MIN                                                                                           |  | 0                                                                                                                                 | 15 | 30                               | 45 | SEC<br>MIN               |  | 0  | 15 | 30 | 45 |
| CITY<br><b>JACKSONVILLE</b>                                                                                                                                  |  |  | STATE<br><b>FLA.</b>                                                                                 |  | ZIP<br><b>32226</b>                                                                                                               |    | 1                                |    | 2                        |  | 3  |    | 4  |    |
| PHONE<br><b>(904) 751-7729</b>                                                                                                                               |  |  | SOURCE ID NUMBER                                                                                     |  | 3                                                                                                                                 |    | 4                                |    | 5                        |  | 6  |    | 7  |    |
| PROCESS EQUIPMENT<br><b>CT 2 COAL CONVEYOR</b>                                                                                                               |  |  | OPERATING MODE<br><b>NORMAL</b>                                                                      |  | 6                                                                                                                                 |    | 7                                |    | 8                        |  | 9  |    | 10 |    |
| CONTROL EQUIPMENT<br><b>ENCLOSURE/UPSTREAM</b>                                                                                                               |  |  | OPERATING MODE<br><b>NORMAL</b>                                                                      |  | 11                                                                                                                                |    | 12                               |    | 13                       |  | 14 |    | 15 |    |
| DESCRIBE EMISSION POINT<br><b>START COAL CONVEYOR STOP</b>                                                                                                   |  |  | HEIGHT ABOVE GROUND LEVEL<br><b>START 6 STOP</b>                                                     |  | HEIGHT RELATIVE TO OBSERVER<br><b>START 6 STOP</b>                                                                                |    | 16                               |    | 17                       |  | 18 |    | 19 |    |
| DISTANCE FROM OBSERVER<br><b>START 0-300 STOP</b>                                                                                                            |  |  | DIRECTION FROM OBSERVER<br><b>START NNW STOP</b>                                                     |  | 20                                                                                                                                |    | 21                               |    | 22                       |  | 23 |    | 24 |    |
| DESCRIBE EMISSIONS<br><b>START STOP</b>                                                                                                                      |  |  | EMISSION COLOR<br><b>START STOP</b>                                                                  |  | PLUME TYPE CONTINUOUS <input type="checkbox"/> FUGITIVE <input checked="" type="checkbox"/> INTERMITTENT <input type="checkbox"/> |    | 25                               |    | 26                       |  | 27 |    | 28 |    |
| WATER DROPLETS PRESENT<br><b>NOR YES</b>                                                                                                                     |  |  | IF WATER DROPLET PLUME<br><b>ATTACHED <input type="checkbox"/> DETACHED <input type="checkbox"/></b> |  | 29                                                                                                                                |    | 30                               |    | 31                       |  | 32 |    | 33 |    |
| POINT IN THE PLUME AT WHICH OPACITY WAS DETERMINED<br><b>START STOP</b>                                                                                      |  |  | DESCRIBE BACKGROUND STRUCTURE<br><b>START VEGETATION STOP</b>                                        |  | BACKGROUND COLOR<br><b>START GREEN STOP</b>                                                                                       |    | 34                               |    | 35                       |  | 36 |    | 37 |    |
| WIND SPEED<br><b>START 5-8 STOP</b>                                                                                                                          |  |  | WIND DIRECTION<br><b>START NE STOP</b>                                                               |  | 38                                                                                                                                |    | 39                               |    | 40                       |  | 41 |    | 42 |    |
| AMBIENT TEMP<br><b>START 40° STOP 50°</b>                                                                                                                    |  |  | WET BULB TEMP                                                                                        |  | RH, percent                                                                                                                       |    | 43                               |    | 44                       |  | 45 |    | 46 |    |
| <p>Source Layout Sketch</p> <p>Draw North Arrow</p> <p>Conveyor</p> <p>Emission Point</p> <p>Observers Position</p> <p>Sun 140°</p> <p>Sun Location Line</p> |  |  | AVERAGE OPACITY FOR HIGHEST PERIOD                                                                   |  | 0                                                                                                                                 |    | NUMBER OF READINGS ABOVE 0% WERE |    | 0                        |  | 0  |    | 0  |    |
|                                                                                                                                                              |  |  | RANGE OF OPACITY READINGS                                                                            |  | MINIMUM                                                                                                                           |    | 0%                               |    | MAXIMUM                  |  | 0% |    | 0% |    |
|                                                                                                                                                              |  |  | OBSERVER'S NAME (PRINT)<br><b>NORMAN R. CZARNIAK</b>                                                 |  |                                                                                                                                   |    |                                  |    |                          |  |    |    |    |    |
|                                                                                                                                                              |  |  | OBSERVER'S SIGNATURE<br><b>Norman R. Czarniak</b>                                                    |  |                                                                                                                                   |    |                                  |    |                          |  |    |    |    |    |
|                                                                                                                                                              |  |  | DATE<br><b>12 FEB 89</b>                                                                             |  |                                                                                                                                   |    |                                  |    |                          |  |    |    |    |    |
|                                                                                                                                                              |  |  | ORGANIZATION<br><b>HUNTER/E.S.E.</b>                                                                 |  |                                                                                                                                   |    |                                  |    |                          |  |    |    |    |    |
|                                                                                                                                                              |  |  | I HAVE RECEIVED A COPY OF THESE OPACITY OBSERVATIONS                                                 |  |                                                                                                                                   |    |                                  |    |                          |  |    |    |    |    |
|                                                                                                                                                              |  |  | SIGNATURE                                                                                            |  |                                                                                                                                   |    |                                  |    |                          |  |    |    |    |    |
|                                                                                                                                                              |  |  | TITLE                                                                                                |  |                                                                                                                                   |    |                                  |    |                          |  |    |    |    |    |
|                                                                                                                                                              |  |  | DATE                                                                                                 |  |                                                                                                                                   |    |                                  |    |                          |  |    |    |    |    |
| CERTIFIED BY<br><b>EASTERN TECH. Assoc.</b>                                                                                                                  |  |  |                                                                                                      |  |                                                                                                                                   |    |                                  |    |                          |  |    |    |    |    |
| DATE<br><b>30 NOV. 88</b>                                                                                                                                    |  |  |                                                                                                      |  |                                                                                                                                   |    |                                  |    |                          |  |    |    |    |    |
| VERIFIED BY                                                                                                                                                  |  |  |                                                                                                      |  |                                                                                                                                   |    |                                  |    |                          |  |    |    |    |    |
| DATE                                                                                                                                                         |  |  |                                                                                                      |  |                                                                                                                                   |    |                                  |    |                          |  |    |    |    |    |



|                                                                                                                                   |  |  |  |                                                                      |  |  |  |                                    |  |  |  |                       |  |  |  |
|-----------------------------------------------------------------------------------------------------------------------------------|--|--|--|----------------------------------------------------------------------|--|--|--|------------------------------------|--|--|--|-----------------------|--|--|--|
| SOURCE NAME <u>COAL TERMINAL Point ④</u><br><u>St. Johns River Power Plant</u>                                                    |  |  |  | OBSERVATION DATE <u>12 FEB. 89</u>                                   |  |  |  | START TIME <u>1622</u>             |  |  |  | STOP TIME <u>1124</u> |  |  |  |
| ADDRESS <u>6020 WILLIAM HILLS ST.</u>                                                                                             |  |  |  | SEC MIN                                                              |  |  |  | SEC MIN                            |  |  |  | SEC MIN               |  |  |  |
|                                                                                                                                   |  |  |  | 0 15 30 45                                                           |  |  |  | 0 15 30 45                         |  |  |  | 0 15 30 45            |  |  |  |
| CITY <u>JACKSONVILLE</u> STATE <u>FLA.</u> ZIP <u>32226</u>                                                                       |  |  |  | 1 0 0 0 0                                                            |  |  |  | 31 0 0 0 0                         |  |  |  | 2 0 0 0 0             |  |  |  |
| PHONE <u>(904) 751-7729</u> SOURCE ID NUMBER                                                                                      |  |  |  | 3 0 0 0 0                                                            |  |  |  | 33 0 0 0 0                         |  |  |  | 3 0 0 0 0             |  |  |  |
| PROCESS EQUIPMENT <u>Transfer Station</u> OPERATING MODE <u>NORMAL</u>                                                            |  |  |  | 4 0 0 0 0                                                            |  |  |  | 34 0 0 0 0                         |  |  |  | 5 0 0 0 0             |  |  |  |
| CONTROL EQUIPMENT <u>WET SUPPRESSION/ENCLOSURE</u> OPERATING MODE <u>NORMAL</u>                                                   |  |  |  | 6 0 0 0 0                                                            |  |  |  | 36 0 0 0 0                         |  |  |  | 7 0 0 0 0             |  |  |  |
| DESCRIBE EMISSION POINT<br><u>START CONVEYOR TRANSFER STATION STOP ✓</u>                                                          |  |  |  | 8 0 0 0 0                                                            |  |  |  | 38 0 0 0 0                         |  |  |  | 9 0 0 0 0             |  |  |  |
| HEIGHT ABOVE GROUND LEVEL<br><u>START 30 STOP ✓</u>                                                                               |  |  |  | 9 0 0 0 0                                                            |  |  |  | 39 0 0 0 0                         |  |  |  | 10 0 0 0 0            |  |  |  |
| HEIGHT RELATIVE TO OBSERVER<br><u>START 30 STOP ✓</u>                                                                             |  |  |  | 10 0 0 0 0                                                           |  |  |  | 40 0 0 0 0                         |  |  |  | 11 0 0 0 0            |  |  |  |
| DISTANCE FROM OBSERVER<br><u>START 120 STOP ✓</u>                                                                                 |  |  |  | 11 0 0 0 0                                                           |  |  |  | 41 0 0 0 0                         |  |  |  | 12 0 0 0 0            |  |  |  |
| DIRECTION FROM OBSERVER<br><u>START NNE STOP ✓</u>                                                                                |  |  |  | 12 0 0 0 0                                                           |  |  |  | 42 0 0 0 0                         |  |  |  | 13 0 0 0 0            |  |  |  |
| DESCRIBE EMISSIONS<br><u>START STOP</u>                                                                                           |  |  |  | 13 0 0 0 0                                                           |  |  |  | 43 0 0 0 0                         |  |  |  | 14 0 0 0 0            |  |  |  |
| EMISSION COLOR<br><u>START STOP</u>                                                                                               |  |  |  | 14 0 0 0 0                                                           |  |  |  | 44 0 0 0 0                         |  |  |  | 15 0 0 0 0            |  |  |  |
| PLUME TYPE CONTINUOUS <input type="checkbox"/> FUGITIVE <input checked="" type="checkbox"/> INTERMITTENT <input type="checkbox"/> |  |  |  | 15 0 0 0 0                                                           |  |  |  | 45 0 0 0 0                         |  |  |  | 16 0 0 0 0            |  |  |  |
| WATER DROPLETS PRESENT<br><u>NOX YES <input type="checkbox"/></u>                                                                 |  |  |  | 16 0 0 0 0                                                           |  |  |  | 46 0 0 0 0                         |  |  |  | 17 0 0 0 0            |  |  |  |
| IF WATER DROPLET PLUME<br><u>ATTACHED <input type="checkbox"/> DETACHED <input type="checkbox"/></u>                              |  |  |  | 17 0 0 0 0                                                           |  |  |  | 47 0 0 0 0                         |  |  |  | 18 0 0 0 0            |  |  |  |
| POINT IN THE PLUME AT WHICH OPACITY WAS DETERMINED<br><u>START STOP</u>                                                           |  |  |  | 18 0 0 0 0                                                           |  |  |  | 48 0 0 0 0                         |  |  |  | 19 0 0 0 0            |  |  |  |
| DESCRIBE BACKGROUND<br><u>START SKY - SUPERSTRUCTURE STOP</u>                                                                     |  |  |  | 19 0 0 0 0                                                           |  |  |  | 49 0 0 0 0                         |  |  |  | 20 0 0 0 0            |  |  |  |
| BACKGROUND COLOR<br><u>START BLUE STOP ✓</u>                                                                                      |  |  |  | 20 0 0 0 0                                                           |  |  |  | 50 0 0 0 0                         |  |  |  | 21 0 0 0 0            |  |  |  |
| SKY CONDITIONS<br><u>START CLEAR STOP ✓</u>                                                                                       |  |  |  | 21 0 0 0 0                                                           |  |  |  | 51 0 0 0 0                         |  |  |  | 22 0 0 0 0            |  |  |  |
| WIND SPEED<br><u>START 5-8 STOP ✓</u>                                                                                             |  |  |  | 22 0 0 0 0                                                           |  |  |  | 52 0 0 0 0                         |  |  |  | 23 0 0 0 0            |  |  |  |
| WIND DIRECTION<br><u>START NE STOP ✓</u>                                                                                          |  |  |  | 23 0 0 0 0                                                           |  |  |  | 53 0 0 0 0                         |  |  |  | 24 0 0 0 0            |  |  |  |
| AMBIENT TEMP<br><u>START 55 STOP 59</u>                                                                                           |  |  |  | 24 0 0 0 0                                                           |  |  |  | 54 0 0 0 0                         |  |  |  | 25 0 0 0 0            |  |  |  |
| WET BULB TEMP RH. percent                                                                                                         |  |  |  | 25 0 0 0 0                                                           |  |  |  | 55 0 0 0 0                         |  |  |  | 26 0 0 0 0            |  |  |  |
| <p>Source Layout Sketch Draw North Arrow</p>                                                                                      |  |  |  | 26 0 0 0 0                                                           |  |  |  | 56 0 0 0 0                         |  |  |  | 27 0 0 0 0            |  |  |  |
|                                                                                                                                   |  |  |  | 27 0 0 0 0                                                           |  |  |  | 57 0 0 0 0                         |  |  |  | 28 0 0 0 0            |  |  |  |
|                                                                                                                                   |  |  |  | 28 0 0 0 0                                                           |  |  |  | 58 0 0 0 0                         |  |  |  | 29 0 0 0 0            |  |  |  |
|                                                                                                                                   |  |  |  | 29 0 0 0 0                                                           |  |  |  | 59 0 0 0 0                         |  |  |  | 30 0 0 0 0            |  |  |  |
|                                                                                                                                   |  |  |  | 30 0 0 0 0                                                           |  |  |  | 60 0 0 0 0                         |  |  |  |                       |  |  |  |
|                                                                                                                                   |  |  |  | AVERAGE OPACITY FOR HIGHEST PERIOD 0                                 |  |  |  | NUMBER OF READINGS ABOVE 0% WERE 0 |  |  |  |                       |  |  |  |
|                                                                                                                                   |  |  |  | RANGE OF OPACITY READINGS MINIMUM 0 MAXIMUM 0                        |  |  |  |                                    |  |  |  |                       |  |  |  |
|                                                                                                                                   |  |  |  | OBSERVER'S NAME (PRINT) <u>NORMAN R. CZARNIAK</u>                    |  |  |  |                                    |  |  |  |                       |  |  |  |
|                                                                                                                                   |  |  |  | OBSERVER'S SIGNATURE <u>NORMAN R. CZARNIAK</u> DATE <u>12 FEB 89</u> |  |  |  |                                    |  |  |  |                       |  |  |  |
|                                                                                                                                   |  |  |  | ORGANIZATION <u>HONTER/ES&amp;E</u>                                  |  |  |  |                                    |  |  |  |                       |  |  |  |
| I HAVE RECEIVED A COPY OF THESE OPACITY OBSERVATIONS SIGNATURE                                                                    |  |  |  | CERTIFIED BY <u>EASTERN TECH. ASSOC.</u> DATE <u>30 NOV. 88</u>      |  |  |  |                                    |  |  |  |                       |  |  |  |
| TITLE                                                                                                                             |  |  |  | DATE                                                                 |  |  |  | DATE                               |  |  |  |                       |  |  |  |

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|                                                                                                                                                                              |  |                                                                                                                                   |  |                                            |  |                   |  |  |  |
|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--|-----------------------------------------------------------------------------------------------------------------------------------|--|--------------------------------------------|--|-------------------|--|--|--|
| SOURCE NAME<br>ST. JOHNS RIVER COAL TERMINAL POWER PARK N.C.                                                                                                                 |  | OBSERVATION DATE<br>12 FEB 89                                                                                                     |  | START TIME<br>1143                         |  | STOP TIME<br>1246 |  |  |  |
| ADDRESS<br>6020 WILLIAM HILLS ST.                                                                                                                                            |  | SEC<br>MIN                                                                                                                        |  | SEC<br>MIN                                 |  |                   |  |  |  |
|                                                                                                                                                                              |  | 0 15 30 45                                                                                                                        |  | 0 15 30 45                                 |  |                   |  |  |  |
| CITY<br>JACKSONVILLE                                                                                                                                                         |  | STATE<br>FLA                                                                                                                      |  | ZIP<br>32226                               |  |                   |  |  |  |
| PHONE<br>904 751-7729                                                                                                                                                        |  | SOURCE ID NUMBER                                                                                                                  |  |                                            |  |                   |  |  |  |
| PROCESS EQUIPMENT<br>CT 3 COAL CONVEYOR                                                                                                                                      |  | OPERATING MODE<br>NORMAL                                                                                                          |  |                                            |  |                   |  |  |  |
| CONTROL EQUIPMENT<br>ENCLOSURE/UPSTREAM SUPPRESSION                                                                                                                          |  | OPERATING MODE<br>NORMAL                                                                                                          |  |                                            |  |                   |  |  |  |
| DESCRIBE EMISSION POINT<br>START ENCLOSED CONVEYOR STOP ✓                                                                                                                    |  |                                                                                                                                   |  |                                            |  |                   |  |  |  |
| HEIGHT ABOVE GROUND LEVEL<br>START 7 STOP ✓                                                                                                                                  |  | HEIGHT RELATIVE TO OBSERVER<br>START 6 Below STOP ✓                                                                               |  |                                            |  |                   |  |  |  |
| DISTANCE FROM OBSERVER<br>START 0-300 STOP ✓                                                                                                                                 |  | DIRECTION FROM OBSERVER<br>START NNW STOP NNW                                                                                     |  |                                            |  |                   |  |  |  |
| DESCRIBE EMISSIONS<br>START STOP                                                                                                                                             |  |                                                                                                                                   |  |                                            |  |                   |  |  |  |
| EMISSION COLOR<br>START STOP                                                                                                                                                 |  | PLUME TYPE CONTINUOUS <input type="checkbox"/> FUGITIVE <input checked="" type="checkbox"/> INTERMITTENT <input type="checkbox"/> |  |                                            |  |                   |  |  |  |
| WATER DROPLETS PRESENT<br>NO <input checked="" type="checkbox"/> YES <input type="checkbox"/>                                                                                |  | IF WATER DROPLET PLUME<br>ATTACHED <input type="checkbox"/> DETACHED <input type="checkbox"/>                                     |  |                                            |  |                   |  |  |  |
| POINT IN THE PLUME AT WHICH OPACITY WAS DETERMINED<br>START STOP                                                                                                             |  |                                                                                                                                   |  |                                            |  |                   |  |  |  |
| DESCRIBE BACKGROUND<br>START DIRT ROAD CATWALK STOP ✓                                                                                                                        |  |                                                                                                                                   |  |                                            |  |                   |  |  |  |
| BACKGROUND COLOR<br>START WHITE-GRAY STOP ✓                                                                                                                                  |  | SKY CONDITIONS<br>START CLEAR STOP ✓                                                                                              |  |                                            |  |                   |  |  |  |
| WIND SPEED<br>START 5-8 STOP ✓                                                                                                                                               |  | WIND DIRECTION<br>START NE STOP ✓                                                                                                 |  |                                            |  |                   |  |  |  |
| AMBIENT TEMP.<br>START 62 STOP 68                                                                                                                                            |  | WET BULB TEMP                                                                                                                     |  | RH. percent                                |  |                   |  |  |  |
| <p>Source Layout Sketch</p> <p>Draw North Arrow</p> <p>X Emission Point</p> <p>Sun Wind → Plume and Stack</p> <p>Observers Position</p> <p>140°</p> <p>Sun Location Line</p> |  | 24 0 0 0 0 54 0 0 0 0                                                                                                             |  |                                            |  |                   |  |  |  |
|                                                                                                                                                                              |  | 25 0 0 0 0 55 0 0 0 0                                                                                                             |  |                                            |  |                   |  |  |  |
|                                                                                                                                                                              |  | 26 0 0 0 0 56 0 0 0 0                                                                                                             |  |                                            |  |                   |  |  |  |
|                                                                                                                                                                              |  | 27 0 0 0 0 57 0 0 0 0                                                                                                             |  |                                            |  |                   |  |  |  |
|                                                                                                                                                                              |  | 28 0 0 0 0 58 0 0 0 0                                                                                                             |  |                                            |  |                   |  |  |  |
|                                                                                                                                                                              |  | 29 0 0 0 0 59 0 0 0 0                                                                                                             |  |                                            |  |                   |  |  |  |
|                                                                                                                                                                              |  | 30 0 0 0 0 60 0 0 0 0                                                                                                             |  |                                            |  |                   |  |  |  |
|                                                                                                                                                                              |  | AVERAGE OPACITY FOR HIGHEST PERIOD 0                                                                                              |  | NUMBER OF READINGS ABOVE 0 % WERE 0        |  |                   |  |  |  |
|                                                                                                                                                                              |  | RANGE OF OPACITY READINGS MINIMUM 0                                                                                               |  | MAXIMUM 0                                  |  |                   |  |  |  |
|                                                                                                                                                                              |  | OBSERVER'S NAME (PRINT)<br>NORMAN R. CZARNIAK                                                                                     |  | OBSERVER'S SIGNATURE<br>Norman R. Czarniak |  | DATE<br>12 FEB 89 |  |  |  |
| COMMENTS<br>Readings 1-30 1st catwalk                                                                                                                                        |  | ORGANIZATION<br>HUNTER ESE                                                                                                        |  |                                            |  |                   |  |  |  |
| I HAVE RECEIVED A COPY OF THESE OPACITY OBSERVATIONS                                                                                                                         |  | CERTIFIED BY<br>EASTERN TECH. ASSOC.                                                                                              |  | DATE<br>30 Nov. 88                         |  |                   |  |  |  |
| SIGNATURE                                                                                                                                                                    |  | VERIFIED BY                                                                                                                       |  | DATE                                       |  |                   |  |  |  |
| TITLE                                                                                                                                                                        |  |                                                                                                                                   |  |                                            |  |                   |  |  |  |
| DATE                                                                                                                                                                         |  |                                                                                                                                   |  |                                            |  |                   |  |  |  |

| SOURCE NAME                                                                                                                                          |  |  | OBSERVATION DATE                           |   |    |    | START TIME |     |   |    | STOP TIME |    |  |  |
|------------------------------------------------------------------------------------------------------------------------------------------------------|--|--|--------------------------------------------|---|----|----|------------|-----|---|----|-----------|----|--|--|
| ST. JOHNS RIVER COAL TERMINAL                                                                                                                        |  |  | 2/12/89                                    |   |    |    | 1225       |     |   |    | 1255      |    |  |  |
| ADDRESS                                                                                                                                              |  |  | SEC                                        |   |    |    | SEC        |     |   |    |           |    |  |  |
| 6020 WILLIAM MILLS ST.                                                                                                                               |  |  | MIN                                        | 0 | 15 | 30 | 45         | MIN | 0 | 15 | 30        | 45 |  |  |
| CITY                                                                                                                                                 |  |  | 1                                          | 0 | 0  | 0  | 0          | 31  |   |    |           |    |  |  |
| JACKSONVILLE                                                                                                                                         |  |  | 2                                          | 0 | 0  | 0  | 0          | 32  |   |    |           |    |  |  |
| STATE                                                                                                                                                |  |  | 3                                          | 0 | 0  | 0  | 0          | 33  |   |    |           |    |  |  |
| FL                                                                                                                                                   |  |  | 4                                          | 0 | 0  | 0  | 0          | 34  |   |    |           |    |  |  |
| ZIP                                                                                                                                                  |  |  | 5                                          | 0 | 0  | 0  | 0          | 35  |   |    |           |    |  |  |
| 32226                                                                                                                                                |  |  | 6                                          | 0 | 0  | 0  | 0          | 36  |   |    |           |    |  |  |
| PHONE                                                                                                                                                |  |  | 7                                          | 0 | 0  | 0  | 0          | 37  |   |    |           |    |  |  |
| 904-751-7729                                                                                                                                         |  |  | 8                                          | 0 | 0  | 0  | 0          | 38  |   |    |           |    |  |  |
| SOURCE ID NUMBER                                                                                                                                     |  |  | 9                                          | 0 | 0  | 0  | 0          | 39  |   |    |           |    |  |  |
| TRANSFER STN #3                                                                                                                                      |  |  | 10                                         | 0 | 0  | 0  | 0          | 40  |   |    |           |    |  |  |
| PROCESS EQUIPMENT                                                                                                                                    |  |  | 11                                         | 0 | 0  | 0  | 0          | 41  |   |    |           |    |  |  |
| TRANSFER STATION                                                                                                                                     |  |  | 12                                         | 0 | 0  | 0  | 0          | 42  |   |    |           |    |  |  |
| OPERATING MODE                                                                                                                                       |  |  | 13                                         | 0 | 0  | 0  | 0          | 43  |   |    |           |    |  |  |
| NORMAL                                                                                                                                               |  |  | 14                                         | 0 | 0  | 0  | 0          | 44  |   |    |           |    |  |  |
| CONTROL EQUIPMENT                                                                                                                                    |  |  | 15                                         | 0 | 0  | 0  | 0          | 45  |   |    |           |    |  |  |
| WET SUPPRESSION/ENCLOSURE                                                                                                                            |  |  | 16                                         | 0 | 0  | 0  | 0          | 46  |   |    |           |    |  |  |
| OPERATING MODE                                                                                                                                       |  |  | 17                                         | 0 | 0  | 0  | 0          | 47  |   |    |           |    |  |  |
| NORMAL                                                                                                                                               |  |  | 18                                         | 0 | 0  | 0  | 0          | 48  |   |    |           |    |  |  |
| DESCRIBE EMISSION POINT                                                                                                                              |  |  | 19                                         | 0 | 0  | 0  | 0          | 49  |   |    |           |    |  |  |
| START STOP                                                                                                                                           |  |  | 20                                         | 0 | 0  | 0  | 0          | 50  |   |    |           |    |  |  |
| HEIGHT ABOVE GROUND LEVEL                                                                                                                            |  |  | 21                                         | 0 | 0  | 0  | 0          | 51  |   |    |           |    |  |  |
| START 50' STOP ✓                                                                                                                                     |  |  | 22                                         | 0 | 0  | 0  | 0          | 52  |   |    |           |    |  |  |
| HEIGHT RELATIVE TO OBSERVER                                                                                                                          |  |  | 23                                         | 0 | 0  | 0  | 0          | 53  |   |    |           |    |  |  |
| START 20' STOP ✓                                                                                                                                     |  |  | 24                                         | 0 | 0  | 0  | 0          | 54  |   |    |           |    |  |  |
| DISTANCE FROM OBSERVER                                                                                                                               |  |  | 25                                         | 0 | 0  | 0  | 0          | 55  |   |    |           |    |  |  |
| START 40' STOP ✓                                                                                                                                     |  |  | 26                                         | 0 | 0  | 0  | 0          | 56  |   |    |           |    |  |  |
| DIRECTION FROM OBSERVER                                                                                                                              |  |  | 27                                         | 0 | 0  | 0  | 0          | 57  |   |    |           |    |  |  |
| START NW STOP ✓                                                                                                                                      |  |  | 28                                         | 0 | 0  | 0  | 0          | 58  |   |    |           |    |  |  |
| DESCRIBE EMISSIONS                                                                                                                                   |  |  | 29                                         | 0 | 0  | 0  | 0          | 59  |   |    |           |    |  |  |
| START NONE STOP                                                                                                                                      |  |  | 30                                         | 0 | 0  | 0  | 0          | 60  |   |    |           |    |  |  |
| EMISSION COLOR                                                                                                                                       |  |  | AVERAGE OPACITY FOR HIGHEST PERIOD 090     |   |    |    |            |     |   |    |           |    |  |  |
| START STOP                                                                                                                                           |  |  | NUMBER OF READINGS ABOVE 0 % WERE 0        |   |    |    |            |     |   |    |           |    |  |  |
| PLUME TYPE: CONTINUOUS <input type="checkbox"/>                                                                                                      |  |  | RANGE OF OPACITY READINGS                  |   |    |    |            |     |   |    |           |    |  |  |
| FUGITIVE <input checked="" type="checkbox"/> INTERMITTENT <input type="checkbox"/>                                                                   |  |  | MINIMUM 0 MAXIMUM 0                        |   |    |    |            |     |   |    |           |    |  |  |
| WATER DROPLETS PRESENT: NO <input checked="" type="checkbox"/> YES <input type="checkbox"/>                                                          |  |  | OBSERVER'S NAME (PRINT) THERESA A. BARNARD |   |    |    |            |     |   |    |           |    |  |  |
| IF WATER DROPLET PLUME ATTACHED <input type="checkbox"/> DETACHED <input type="checkbox"/>                                                           |  |  | OBSERVER'S SIGNATURE Theresa A. Barnard    |   |    |    |            |     |   |    |           |    |  |  |
| POINT IN THE PLUME AT WHICH OPACITY WAS DETERMINED                                                                                                   |  |  | DATE 2/12/89                               |   |    |    |            |     |   |    |           |    |  |  |
| START 1' ABOVE TRANSFER STATION STOP                                                                                                                 |  |  | ORGANIZATION HUNTER I/EE                   |   |    |    |            |     |   |    |           |    |  |  |
| DESCRIBE BACKGROUND                                                                                                                                  |  |  | CERTIFIED BY EASTERN TECH. ASSOC.          |   |    |    |            |     |   |    |           |    |  |  |
| START SKY STOP ✓                                                                                                                                     |  |  | DATE 11/30/88                              |   |    |    |            |     |   |    |           |    |  |  |
| BACKGROUND COLOR                                                                                                                                     |  |  | VERIFIED BY                                |   |    |    |            |     |   |    |           |    |  |  |
| START BLUE STOP ✓                                                                                                                                    |  |  | DATE                                       |   |    |    |            |     |   |    |           |    |  |  |
| SKY CONDITIONS                                                                                                                                       |  |  |                                            |   |    |    |            |     |   |    |           |    |  |  |
| START CLEAR STOP ✓                                                                                                                                   |  |  |                                            |   |    |    |            |     |   |    |           |    |  |  |
| WIND SPEED                                                                                                                                           |  |  |                                            |   |    |    |            |     |   |    |           |    |  |  |
| START 5-10 mph STOP ✓                                                                                                                                |  |  |                                            |   |    |    |            |     |   |    |           |    |  |  |
| WIND DIRECTION                                                                                                                                       |  |  |                                            |   |    |    |            |     |   |    |           |    |  |  |
| START NE STOP ✓                                                                                                                                      |  |  |                                            |   |    |    |            |     |   |    |           |    |  |  |
| AMBIENT TEMP.                                                                                                                                        |  |  |                                            |   |    |    |            |     |   |    |           |    |  |  |
| START 69°F STOP ✓                                                                                                                                    |  |  |                                            |   |    |    |            |     |   |    |           |    |  |  |
| WET BULB TEMP.                                                                                                                                       |  |  |                                            |   |    |    |            |     |   |    |           |    |  |  |
| 55°F                                                                                                                                                 |  |  |                                            |   |    |    |            |     |   |    |           |    |  |  |
| RH. percent                                                                                                                                          |  |  |                                            |   |    |    |            |     |   |    |           |    |  |  |
| 41.70                                                                                                                                                |  |  |                                            |   |    |    |            |     |   |    |           |    |  |  |
| <p>Source Layout Sketch</p>                                                                                                                          |  |  |                                            |   |    |    |            |     |   |    |           |    |  |  |
| <p>COMMENTS FROM SE SIDE OF TRANSFER STATION</p> <p>HAVE RECEIVED A COPY OF THESE OPACITY OBSERVATIONS</p> <p>SIGNATURE</p> <p>TITLE</p> <p>DATE</p> |  |  |                                            |   |    |    |            |     |   |    |           |    |  |  |

|                                                                                                |  |  |                                                                                                                                       |  |                  |  |  |                                    |  |  |  |  |                   |  |  |  |  |
|------------------------------------------------------------------------------------------------|--|--|---------------------------------------------------------------------------------------------------------------------------------------|--|------------------|--|--|------------------------------------|--|--|--|--|-------------------|--|--|--|--|
| SOURCE NAME<br>ST. JOHNS RIVER COAL TERMINAL                                                   |  |  | OBSERVATION DATE<br>2/12/89                                                                                                           |  |                  |  |  | START TIME<br>1300                 |  |  |  |  | STOP TIME<br>1330 |  |  |  |  |
| ADDRESS<br>0020 WILLIAM MILLS ST.                                                              |  |  | SEC<br>MIN                                                                                                                            |  |                  |  |  | SEC<br>MIN                         |  |  |  |  | SEC<br>MIN        |  |  |  |  |
|                                                                                                |  |  | 0 15 30 45                                                                                                                            |  |                  |  |  | 0 15 30 45                         |  |  |  |  | 0 15 30 45        |  |  |  |  |
| CITY<br>JACKSONVILLE                                                                           |  |  | STATE<br>FL                                                                                                                           |  |                  |  |  | ZIP<br>32226                       |  |  |  |  |                   |  |  |  |  |
| PHONE<br>904-751-7729                                                                          |  |  | SOURCE ID NUMBER<br>TRANSFER STN #3                                                                                                   |  |                  |  |  |                                    |  |  |  |  |                   |  |  |  |  |
| PROCESS EQUIPMENT<br>CONVEYER TRANSFER                                                         |  |  | OPERATING MODE<br>NORMAL                                                                                                              |  |                  |  |  |                                    |  |  |  |  |                   |  |  |  |  |
| CONTROL EQUIPMENT<br>WET SUPPRESSION/ENCLOSURE                                                 |  |  | OPERATING MODE<br>NORMAL                                                                                                              |  |                  |  |  |                                    |  |  |  |  |                   |  |  |  |  |
| DESCRIBE EMISSION POINT<br>START STOP                                                          |  |  |                                                                                                                                       |  |                  |  |  |                                    |  |  |  |  |                   |  |  |  |  |
| HEIGHT ABOVE GROUND LEVEL<br>START 50' STOP ✓                                                  |  |  | HEIGHT RELATIVE TO OBSERVER<br>START 50' STOP ✓                                                                                       |  |                  |  |  |                                    |  |  |  |  |                   |  |  |  |  |
| DISTANCE FROM OBSERVER<br>START 75' STOP ✓                                                     |  |  | DIRECTION FROM OBSERVER<br>START SE STOP ✓                                                                                            |  |                  |  |  |                                    |  |  |  |  |                   |  |  |  |  |
| DESCRIBE EMISSIONS<br>START NONE STOP                                                          |  |  |                                                                                                                                       |  |                  |  |  |                                    |  |  |  |  |                   |  |  |  |  |
| EMISSION COLOR<br>START STOP                                                                   |  |  | PLUME TYPE: CONTINUOUS <input type="checkbox"/><br>FUGITIVE <input checked="" type="checkbox"/> INTERMITTENT <input type="checkbox"/> |  |                  |  |  |                                    |  |  |  |  |                   |  |  |  |  |
| WATER DROPLETS PRESENT:<br>NO <input checked="" type="checkbox"/> YES <input type="checkbox"/> |  |  | IF WATER DROPLET PLUME<br>ATTACHED <input type="checkbox"/> DETACHED <input type="checkbox"/>                                         |  |                  |  |  |                                    |  |  |  |  |                   |  |  |  |  |
| POINT IN THE PLUME AT WHICH OPACITY WAS DETERMINED<br>START 1" ABOVE TRANSFER STOP             |  |  |                                                                                                                                       |  |                  |  |  |                                    |  |  |  |  |                   |  |  |  |  |
| DESCRIBE BACKGROUND<br>START SKY STOP ✓                                                        |  |  |                                                                                                                                       |  |                  |  |  |                                    |  |  |  |  |                   |  |  |  |  |
| BACKGROUND COLOR<br>START BLUE STOP ✓                                                          |  |  | SKY CONDITIONS<br>START CLEAR STOP ✓                                                                                                  |  |                  |  |  |                                    |  |  |  |  |                   |  |  |  |  |
| WIND SPEED<br>START 5-10 mph STOP ✓                                                            |  |  | WIND DIRECTION<br>START NE STOP ✓                                                                                                     |  |                  |  |  |                                    |  |  |  |  |                   |  |  |  |  |
| AMBIENT TEMP.<br>START 69°F STOP ✓                                                             |  |  | WET BULB TEMP.<br>55°F                                                                                                                |  |                  |  |  | RH. percent<br>41%                 |  |  |  |  |                   |  |  |  |  |
|                                                                                                |  |  | 24 0 0 0 0 0 54                                                                                                                       |  |                  |  |  |                                    |  |  |  |  |                   |  |  |  |  |
|                                                                                                |  |  | 25 0 0 0 0 0 55                                                                                                                       |  |                  |  |  |                                    |  |  |  |  |                   |  |  |  |  |
|                                                                                                |  |  | 26 0 0 0 0 0 56                                                                                                                       |  |                  |  |  |                                    |  |  |  |  |                   |  |  |  |  |
|                                                                                                |  |  | 27 0 0 0 0 0 57                                                                                                                       |  |                  |  |  |                                    |  |  |  |  |                   |  |  |  |  |
|                                                                                                |  |  | 28 0 0 0 0 0 58                                                                                                                       |  |                  |  |  |                                    |  |  |  |  |                   |  |  |  |  |
|                                                                                                |  |  | 29 0 0 0 0 0 59                                                                                                                       |  |                  |  |  |                                    |  |  |  |  |                   |  |  |  |  |
|                                                                                                |  |  | 30 0 0 0 0 0 60                                                                                                                       |  |                  |  |  |                                    |  |  |  |  |                   |  |  |  |  |
|                                                                                                |  |  | AVERAGE OPACITY FOR HIGHEST PERIOD 0%                                                                                                 |  |                  |  |  | NUMBER OF READINGS ABOVE 0% WERE 0 |  |  |  |  |                   |  |  |  |  |
|                                                                                                |  |  | RANGE OF OPACITY READINGS MINIMUM 0 MAXIMUM 0                                                                                         |  |                  |  |  |                                    |  |  |  |  |                   |  |  |  |  |
|                                                                                                |  |  | OBSERVER'S NAME (PRINT)<br>THERESA A. BARNARD                                                                                         |  |                  |  |  |                                    |  |  |  |  |                   |  |  |  |  |
| OBSERVER'S SIGNATURE<br>Theresa A. Barnard                                                     |  |  |                                                                                                                                       |  | DATE<br>2/12/89  |  |  |                                    |  |  |  |  |                   |  |  |  |  |
| ORGANIZATION<br>HUNTER ESE                                                                     |  |  |                                                                                                                                       |  |                  |  |  |                                    |  |  |  |  |                   |  |  |  |  |
| CERTIFIED BY<br>EASTERN TECH. ASSOC.                                                           |  |  |                                                                                                                                       |  | DATE<br>11/30/88 |  |  |                                    |  |  |  |  |                   |  |  |  |  |
| VERIFIED BY                                                                                    |  |  |                                                                                                                                       |  | DATE             |  |  |                                    |  |  |  |  |                   |  |  |  |  |

|                                                                                                                                                                        |  |  |                                                                                                   |         |                     |                           |                           |  |      |  |                          |  |  |  |
|------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--|--|---------------------------------------------------------------------------------------------------|---------|---------------------|---------------------------|---------------------------|--|------|--|--------------------------|--|--|--|
| SOURCE NAME<br><b>COAL TERMINAL<br/>ST. JOHNS RIVER POWER PARK, INC.</b>                                                                                               |  |  | OBSERVATION DATE<br><b>12 FEB. 89</b>                                                             |         |                     |                           | START TIME<br><b>1256</b> |  |      |  | STOP TIME<br><b>1356</b> |  |  |  |
| ADDRESS<br><b>6020 WILLIAM HILLS ST.</b>                                                                                                                               |  |  | SEC<br>MIN 0 15 30 45                                                                             |         |                     |                           | SEC<br>MIN 0 15 30 45     |  |      |  |                          |  |  |  |
| CITY<br><b>JACKSONVILLE</b>                                                                                                                                            |  |  | STATE<br><b>FLA.</b>                                                                              |         | ZIP<br><b>32226</b> |                           | 1 0 0 0 0 31              |  |      |  | / / / /                  |  |  |  |
| PHONE<br><b>(904) 791-7729</b>                                                                                                                                         |  |  | SOURCE ID NUMBER                                                                                  |         |                     |                           | 2 0 0 0 0 32              |  |      |  | / 0 0 /                  |  |  |  |
| PROCESS EQUIPMENT<br><b>COAL STACKER</b>                                                                                                                               |  |  | OPERATING MODE<br><b>NORMAL</b>                                                                   |         |                     |                           | 3 0 0 0 0 33              |  |      |  | / 5 5 5                  |  |  |  |
| CONTROL EQUIPMENT<br><b>WET SUPPRESSION</b>                                                                                                                            |  |  | OPERATING MODE<br><b>NORMAL</b>                                                                   |         |                     |                           | 4 0 0 0 0 34              |  |      |  | 5 5 / /                  |  |  |  |
| DESCRIBE EMISSION POINT<br><b>END OF CONVEYOR DEPOSIT (7)</b>                                                                                                          |  |  | START<br><b>COAL IN PILE STOP</b>                                                                 |         |                     |                           | 5 0 0 0 0 35              |  |      |  | 5 / / /                  |  |  |  |
| HEIGHT ABOVE GROUND LEVEL<br><b>START 25' STOP</b>                                                                                                                     |  |  | HEIGHT RELATIVE TO OBSERVER<br><b>START 25' STOP</b>                                              |         |                     |                           | 6 0 0 0 0 36              |  |      |  | 0 0 / /                  |  |  |  |
| DISTANCE FROM OBSERVER<br><b>START 100' STOP</b>                                                                                                                       |  |  | DIRECTION FROM OBSERVER<br><b>START N, STOP</b>                                                   |         |                     |                           | 7 0 0 0 0 37              |  |      |  | / / 0 0                  |  |  |  |
| DESCRIBE EMISSIONS<br><b>START Black coal dust STOP</b>                                                                                                                |  |  | FROM END OF CONVEYOR<br><b>STOP</b>                                                               |         |                     |                           | 8 0 0 0 0 38              |  |      |  | / / / /                  |  |  |  |
| EMISSION COLOR<br><b>START Black STOP</b>                                                                                                                              |  |  | PLUME TYPE: CONTINUOUS <input type="checkbox"/><br>FUGITIVE INTERMITTENT <input type="checkbox"/> |         |                     |                           | 9 0 0 0 0 39              |  |      |  | / / / /                  |  |  |  |
| WATER DROPLETS PRESENT:<br><b>NO YES</b>                                                                                                                               |  |  | IF WATER DROPLET PLUME:<br>ATTACHED <input type="checkbox"/> DETACHED <input type="checkbox"/>    |         |                     |                           | 10 0 0 0 0 40             |  |      |  | / / 0 /                  |  |  |  |
| POINT IN THE PLUME AT WHICH OPACITY WAS DETERMINED<br><b>START 2' after STOP</b>                                                                                       |  |  |                                                                                                   |         |                     |                           | 11 0 0 0 0 41             |  |      |  | / / / /                  |  |  |  |
| DESCRIBE BACKGROUND<br><b>START SKY STOP SKY</b>                                                                                                                       |  |  |                                                                                                   |         |                     |                           | 12 0 0 0 0 42             |  |      |  | / / / /                  |  |  |  |
| BACKGROUND COLOR<br><b>START BLUE STOP</b>                                                                                                                             |  |  | SKY CONDITIONS<br><b>START CLEAR STOP</b>                                                         |         |                     |                           | 13 0 0 0 0 43             |  |      |  | / / / /                  |  |  |  |
| WIND SPEED<br><b>START 6-10 STOP</b>                                                                                                                                   |  |  | WIND DIRECTION<br><b>START NE STOP Variable</b>                                                   |         |                     |                           | 14 0 0 0 0 44             |  |      |  | / / / /                  |  |  |  |
| AMBIENT TEMP.<br><b>START 67 STOP 70</b>                                                                                                                               |  |  | WET BULB TEMP.                                                                                    |         | RH. percent         |                           | 15 0 0 0 0 45             |  |      |  | 0 0 / /                  |  |  |  |
| <p>Source Layout Sketch Draw North Arrow</p> <p>Coal Stack<br/>Emission Point<br/>Sun &amp; Wind<br/>Plume and Stack<br/>Observer's Position<br/>Sundirection Line</p> |  |  | 16 / 0 0 5 46                                                                                     |         |                     |                           | / / / /                   |  |      |  |                          |  |  |  |
|                                                                                                                                                                        |  |  | 17 5 5 / / 47                                                                                     |         |                     |                           | / / / /                   |  |      |  |                          |  |  |  |
|                                                                                                                                                                        |  |  | 18 / 0 0 0 48                                                                                     |         |                     |                           | / / / /                   |  |      |  |                          |  |  |  |
|                                                                                                                                                                        |  |  | 19 0 0 0 0 49                                                                                     |         |                     |                           | / / / /                   |  |      |  |                          |  |  |  |
|                                                                                                                                                                        |  |  | 20 0 0 0 0 50                                                                                     |         |                     |                           | / / / /                   |  |      |  |                          |  |  |  |
|                                                                                                                                                                        |  |  | 21 0 0 / 0 51                                                                                     |         |                     |                           | / / / /                   |  |      |  |                          |  |  |  |
|                                                                                                                                                                        |  |  | 22 0 0 0 0 52                                                                                     |         |                     |                           | / / / /                   |  |      |  |                          |  |  |  |
|                                                                                                                                                                        |  |  | 23 0 0 0 0 53                                                                                     |         |                     |                           | / / / /                   |  |      |  |                          |  |  |  |
|                                                                                                                                                                        |  |  | 24 / 0 0 0 54                                                                                     |         |                     |                           | / / 5 /                   |  |      |  |                          |  |  |  |
|                                                                                                                                                                        |  |  | 25 / 5 5 / 55                                                                                     |         |                     |                           | / / 0 0                   |  |      |  |                          |  |  |  |
| 26 / / / / 56                                                                                                                                                          |  |  |                                                                                                   | 0 / / / |                     |                           |                           |  |      |  |                          |  |  |  |
| 27 / / / / 57                                                                                                                                                          |  |  |                                                                                                   | / / 0 0 |                     |                           |                           |  |      |  |                          |  |  |  |
| 28 / / / / 58                                                                                                                                                          |  |  |                                                                                                   | 0 / / / |                     |                           |                           |  |      |  |                          |  |  |  |
| 29 / / / / 59                                                                                                                                                          |  |  |                                                                                                   | / / / / |                     |                           |                           |  |      |  |                          |  |  |  |
| 30 / 0 0 0 60                                                                                                                                                          |  |  |                                                                                                   | / / 0 0 |                     |                           |                           |  |      |  |                          |  |  |  |
| AVERAGE OPACITY FOR HIGHEST PERIOD<br><b>1.25%</b>                                                                                                                     |  |  | NUMBER OF READINGS ABOVE<br><b>5% WERE 0</b>                                                      |         |                     |                           |                           |  |      |  |                          |  |  |  |
| RANGE OF OPACITY READINGS<br>MINIMUM <b>0%</b> MAXIMUM <b>5%</b>                                                                                                       |  |  |                                                                                                   |         |                     |                           |                           |  |      |  |                          |  |  |  |
| OBSERVER'S NAME (PRINT)<br><b>NORMAN R. CZARNIAK</b>                                                                                                                   |  |  |                                                                                                   |         |                     |                           |                           |  |      |  |                          |  |  |  |
| OBSERVER'S SIGNATURE<br><b>NORMAN R. CZARNIAK</b>                                                                                                                      |  |  | DATE<br><b>12 FEB 89</b>                                                                          |         |                     |                           |                           |  |      |  |                          |  |  |  |
| ORGANIZATION<br><b>HUNTER/E.S.E.</b>                                                                                                                                   |  |  |                                                                                                   |         |                     |                           |                           |  |      |  |                          |  |  |  |
| I HAVE RECEIVED A COPY OF THESE OPACITY OBSERVATIONS<br>SIGNATURE                                                                                                      |  |  | CERTIFIED BY<br><b>EASTERN TECH. ASSOC.</b>                                                       |         |                     | DATE<br><b>30 NOV. 88</b> |                           |  |      |  |                          |  |  |  |
| TITLE                                                                                                                                                                  |  |  | DATE                                                                                              |         |                     | VERIFIED BY               |                           |  | DATE |  |                          |  |  |  |

|                                                                                                                                                                 |  |  |  |                                                                                                                                    |  |  |  |                                  |  |  |  |                          |  |  |  |
|-----------------------------------------------------------------------------------------------------------------------------------------------------------------|--|--|--|------------------------------------------------------------------------------------------------------------------------------------|--|--|--|----------------------------------|--|--|--|--------------------------|--|--|--|
| SOURCE NAME<br><b>ST. JOHNS RIVER COAL TERMINAL</b>                                                                                                             |  |  |  | OBSERVATION DATE<br><b>2/15/89</b>                                                                                                 |  |  |  | START TIME<br><b>1423</b>        |  |  |  | STOP TIME<br><b>1525</b> |  |  |  |
| ADDRESS<br><b>6020 WILLIAM HILLS ST.</b>                                                                                                                        |  |  |  | SEC<br>0 15 30 45                                                                                                                  |  |  |  | SEC<br>0 15 30 45                |  |  |  |                          |  |  |  |
| CITY<br><b>JACKSONVILLE</b>                                                                                                                                     |  |  |  | STATE<br><b>FLA</b>                                                                                                                |  |  |  | ZIP<br><b>32226</b>              |  |  |  |                          |  |  |  |
| PHONE<br><b>(904) 751-7729</b>                                                                                                                                  |  |  |  | SOURCE ID NUMBER<br><b>RECLAIMER (8)</b>                                                                                           |  |  |  |                                  |  |  |  |                          |  |  |  |
| PROCESS EQUIPMENT<br><b>COAL RECLAIMER</b>                                                                                                                      |  |  |  | OPERATING MODE<br><b>NORMAL</b>                                                                                                    |  |  |  |                                  |  |  |  |                          |  |  |  |
| CONTROL EQUIPMENT<br><b>WET SUPPRESSION</b>                                                                                                                     |  |  |  | OPERATING MODE<br><b>NORMAL</b>                                                                                                    |  |  |  |                                  |  |  |  |                          |  |  |  |
| DESCRIBE EMISSION POINT<br><b>RECLAIMER BUCKETS START EMPTYING ON STOP CONVEYOR</b>                                                                             |  |  |  |                                                                                                                                    |  |  |  |                                  |  |  |  |                          |  |  |  |
| HEIGHT ABOVE GROUND LEVEL<br><b>START 25' STOP ✓</b>                                                                                                            |  |  |  | HEIGHT RELATIVE TO OBSERVER<br><b>START 25' STOP ✓</b>                                                                             |  |  |  |                                  |  |  |  |                          |  |  |  |
| DISTANCE FROM OBSERVER<br><b>START 60' STOP ✓</b>                                                                                                               |  |  |  | DIRECTION FROM OBSERVER<br><b>START NW STOP</b>                                                                                    |  |  |  |                                  |  |  |  |                          |  |  |  |
| DESCRIBE EMISSIONS<br><b>START NONE STOP</b>                                                                                                                    |  |  |  |                                                                                                                                    |  |  |  |                                  |  |  |  |                          |  |  |  |
| EMISSION COLOR<br><b>START STOP</b>                                                                                                                             |  |  |  | PLUME TYPE: CONTINUOUS <input type="checkbox"/> FUGITIVE <input checked="" type="checkbox"/> INTERMITTENT <input type="checkbox"/> |  |  |  |                                  |  |  |  |                          |  |  |  |
| WATER DROPLETS PRESENT:<br><b>NO <input checked="" type="checkbox"/> YES <input type="checkbox"/></b>                                                           |  |  |  | IF WATER DROPLET PLUME:<br><b>ATTACHED <input type="checkbox"/> DETACHED <input type="checkbox"/></b>                              |  |  |  |                                  |  |  |  |                          |  |  |  |
| POINT IN THE PLUME AT WHICH OPACITY WAS DETERMINED<br><b>START 1' ABOVE BULB STOP ON TOP</b>                                                                    |  |  |  |                                                                                                                                    |  |  |  |                                  |  |  |  |                          |  |  |  |
| DESCRIBE BACKGROUND<br><b>START SKY STOP ✓</b>                                                                                                                  |  |  |  |                                                                                                                                    |  |  |  |                                  |  |  |  |                          |  |  |  |
| BACKGROUND COLOR<br><b>START BLUE STOP ✓</b>                                                                                                                    |  |  |  | SKY CONDITIONS<br><b>START CLEAR STOP ✓</b>                                                                                        |  |  |  |                                  |  |  |  |                          |  |  |  |
| WIND SPEED<br><b>START 4 mph STOP</b>                                                                                                                           |  |  |  | WIND DIRECTION<br><b>START SE STOP ✓</b>                                                                                           |  |  |  |                                  |  |  |  |                          |  |  |  |
| AMBIENT TEMP<br><b>START 80°F STOP ✓</b>                                                                                                                        |  |  |  | WET BULB TEMP.<br><b>70°F</b>                                                                                                      |  |  |  | RH. PERCENT<br><b>62-70</b>      |  |  |  |                          |  |  |  |
| <p>Source Layout Sketch</p> <p>Draw North Arrow</p> <p>COAL PILL</p> <p>CONVEYOR</p> <p>Observer's Position</p> <p>Sun Location Line</p> <p>Plume and Stack</p> |  |  |  | 1                                                                                                                                  |  |  |  | 31                               |  |  |  |                          |  |  |  |
|                                                                                                                                                                 |  |  |  | 2                                                                                                                                  |  |  |  | 32                               |  |  |  |                          |  |  |  |
|                                                                                                                                                                 |  |  |  | 3                                                                                                                                  |  |  |  | 33                               |  |  |  |                          |  |  |  |
|                                                                                                                                                                 |  |  |  | 4                                                                                                                                  |  |  |  | 34                               |  |  |  |                          |  |  |  |
|                                                                                                                                                                 |  |  |  | 5                                                                                                                                  |  |  |  | 35                               |  |  |  |                          |  |  |  |
|                                                                                                                                                                 |  |  |  | 6                                                                                                                                  |  |  |  | 36                               |  |  |  |                          |  |  |  |
|                                                                                                                                                                 |  |  |  | 7                                                                                                                                  |  |  |  | 37                               |  |  |  |                          |  |  |  |
|                                                                                                                                                                 |  |  |  | 8                                                                                                                                  |  |  |  | 38                               |  |  |  |                          |  |  |  |
|                                                                                                                                                                 |  |  |  | 9                                                                                                                                  |  |  |  | 39                               |  |  |  |                          |  |  |  |
|                                                                                                                                                                 |  |  |  | 10                                                                                                                                 |  |  |  | 40                               |  |  |  |                          |  |  |  |
| 11                                                                                                                                                              |  |  |  | 41                                                                                                                                 |  |  |  |                                  |  |  |  |                          |  |  |  |
| 12                                                                                                                                                              |  |  |  | 42                                                                                                                                 |  |  |  |                                  |  |  |  |                          |  |  |  |
| 13                                                                                                                                                              |  |  |  | 43                                                                                                                                 |  |  |  |                                  |  |  |  |                          |  |  |  |
| 14                                                                                                                                                              |  |  |  | 44                                                                                                                                 |  |  |  |                                  |  |  |  |                          |  |  |  |
| 15                                                                                                                                                              |  |  |  | 45                                                                                                                                 |  |  |  |                                  |  |  |  |                          |  |  |  |
| 16                                                                                                                                                              |  |  |  | 46                                                                                                                                 |  |  |  |                                  |  |  |  |                          |  |  |  |
| 17                                                                                                                                                              |  |  |  | 47                                                                                                                                 |  |  |  |                                  |  |  |  |                          |  |  |  |
| 18                                                                                                                                                              |  |  |  | 48                                                                                                                                 |  |  |  |                                  |  |  |  |                          |  |  |  |
| 19                                                                                                                                                              |  |  |  | 49                                                                                                                                 |  |  |  |                                  |  |  |  |                          |  |  |  |
| 20                                                                                                                                                              |  |  |  | 50                                                                                                                                 |  |  |  |                                  |  |  |  |                          |  |  |  |
| 21                                                                                                                                                              |  |  |  | 51                                                                                                                                 |  |  |  |                                  |  |  |  |                          |  |  |  |
| 22                                                                                                                                                              |  |  |  | 52                                                                                                                                 |  |  |  |                                  |  |  |  |                          |  |  |  |
| 23                                                                                                                                                              |  |  |  | 53                                                                                                                                 |  |  |  |                                  |  |  |  |                          |  |  |  |
| 24                                                                                                                                                              |  |  |  | 54                                                                                                                                 |  |  |  |                                  |  |  |  |                          |  |  |  |
| 25                                                                                                                                                              |  |  |  | 55                                                                                                                                 |  |  |  |                                  |  |  |  |                          |  |  |  |
| 26                                                                                                                                                              |  |  |  | 56                                                                                                                                 |  |  |  |                                  |  |  |  |                          |  |  |  |
| 27                                                                                                                                                              |  |  |  | 57                                                                                                                                 |  |  |  |                                  |  |  |  |                          |  |  |  |
| 28                                                                                                                                                              |  |  |  | 58                                                                                                                                 |  |  |  |                                  |  |  |  |                          |  |  |  |
| 29                                                                                                                                                              |  |  |  | 59                                                                                                                                 |  |  |  |                                  |  |  |  |                          |  |  |  |
| 30                                                                                                                                                              |  |  |  | 60                                                                                                                                 |  |  |  |                                  |  |  |  |                          |  |  |  |
| AVERAGE OPACITY FOR HIGHEST PERIOD                                                                                                                              |  |  |  | 090                                                                                                                                |  |  |  | NUMBER OF READINGS ABOVE 0% WERE |  |  |  | 0                        |  |  |  |
| RANGE OF OPACITY READINGS                                                                                                                                       |  |  |  | MINIMUM 0                                                                                                                          |  |  |  | MAXIMUM 0                        |  |  |  |                          |  |  |  |
| OBSERVER'S NAME (PRINT)                                                                                                                                         |  |  |  | THERESA A. BARNARD                                                                                                                 |  |  |  |                                  |  |  |  |                          |  |  |  |
| OBSERVER'S SIGNATURE                                                                                                                                            |  |  |  | Theresa A. Barnard                                                                                                                 |  |  |  | DATE                             |  |  |  | 2/15/89                  |  |  |  |
| ORGANIZATION                                                                                                                                                    |  |  |  | HUNTER ESE                                                                                                                         |  |  |  |                                  |  |  |  |                          |  |  |  |
| CERTIFIED BY                                                                                                                                                    |  |  |  | GASTON TECA. ASSOC                                                                                                                 |  |  |  | DATE                             |  |  |  | 11/30/88                 |  |  |  |
| VERIFIED BY                                                                                                                                                     |  |  |  |                                                                                                                                    |  |  |  | DATE                             |  |  |  |                          |  |  |  |
| COMMENTS<br><b>INDICATES RECLAIMER PAUSING</b>                                                                                                                  |  |  |  |                                                                                                                                    |  |  |  |                                  |  |  |  |                          |  |  |  |
| I HAVE RECEIVED A COPY OF THESE OPACITY OBSERVATIONS                                                                                                            |  |  |  |                                                                                                                                    |  |  |  |                                  |  |  |  |                          |  |  |  |
| SIGNATURE                                                                                                                                                       |  |  |  |                                                                                                                                    |  |  |  |                                  |  |  |  |                          |  |  |  |
| TITLE                                                                                                                                                           |  |  |  |                                                                                                                                    |  |  |  |                                  |  |  |  |                          |  |  |  |
| DATE                                                                                                                                                            |  |  |  |                                                                                                                                    |  |  |  |                                  |  |  |  |                          |  |  |  |

TEST SERIES #2 - VENEZUELAN COAL



| SOURCE NAME                                        |  |  | OBSERVATION DATE |  |  |  | START TIME     |  |  |  | STOP TIME |  |  |  |
|----------------------------------------------------|--|--|------------------|--|--|--|----------------|--|--|--|-----------|--|--|--|
| ST. Johns River Coal Terminal                      |  |  | 2-22-89          |  |  |  | 15:25          |  |  |  | 16:25     |  |  |  |
| ADDRESS                                            |  |  | SEC              |  |  |  | SEC            |  |  |  |           |  |  |  |
| 6020 William Mills St.                             |  |  | MIN 0 15 30 45   |  |  |  | MIN 0 15 30 45 |  |  |  |           |  |  |  |
| CITY                                               |  |  | MIN              |  |  |  | MIN            |  |  |  |           |  |  |  |
| Jacksonville                                       |  |  | 15:30            |  |  |  | 31             |  |  |  |           |  |  |  |
| STATE                                              |  |  | 2                |  |  |  | 32             |  |  |  |           |  |  |  |
| Florida                                            |  |  | 3                |  |  |  | 33             |  |  |  |           |  |  |  |
| ZIP                                                |  |  | 4                |  |  |  | 34             |  |  |  |           |  |  |  |
| 32226                                              |  |  | 5                |  |  |  | 35             |  |  |  |           |  |  |  |
| PHONE                                              |  |  | 6                |  |  |  | 36             |  |  |  |           |  |  |  |
| 904-751-7729                                       |  |  | 15:34            |  |  |  | 37             |  |  |  |           |  |  |  |
| SOURCE ID NUMBER                                   |  |  | 8                |  |  |  | 38             |  |  |  |           |  |  |  |
| #1 WET                                             |  |  | 9                |  |  |  | 39             |  |  |  |           |  |  |  |
| PROCESS EQUIPMENT                                  |  |  | 10               |  |  |  | 40             |  |  |  |           |  |  |  |
| Ship Unloader                                      |  |  | 11               |  |  |  | 41             |  |  |  |           |  |  |  |
| OPERATING MODE                                     |  |  | 12               |  |  |  | 42             |  |  |  |           |  |  |  |
| Normal                                             |  |  | 13               |  |  |  | 43             |  |  |  |           |  |  |  |
| CONTROL EQUIPMENT                                  |  |  | 14               |  |  |  | 44             |  |  |  |           |  |  |  |
| Wet Down System                                    |  |  | 15               |  |  |  | 45             |  |  |  |           |  |  |  |
| OPERATING MODE                                     |  |  | 16               |  |  |  | 46             |  |  |  |           |  |  |  |
| Normal                                             |  |  | 17               |  |  |  | 47             |  |  |  |           |  |  |  |
| DESCRIBE EMISSION POINT                            |  |  | 18               |  |  |  | 48             |  |  |  |           |  |  |  |
| START                                              |  |  | 19               |  |  |  | 49             |  |  |  |           |  |  |  |
| STOP                                               |  |  | 20               |  |  |  | 50             |  |  |  |           |  |  |  |
| HEIGHT ABOVE GROUND LEVEL                          |  |  | 21               |  |  |  | 51             |  |  |  |           |  |  |  |
| START                                              |  |  | 22               |  |  |  | 52             |  |  |  |           |  |  |  |
| STOP                                               |  |  | 23               |  |  |  | 53             |  |  |  |           |  |  |  |
| HEIGHT RELATIVE TO OBSERVER                        |  |  | 24               |  |  |  | 54             |  |  |  |           |  |  |  |
| START                                              |  |  | 25               |  |  |  | 55             |  |  |  |           |  |  |  |
| STOP                                               |  |  | 26               |  |  |  | 56             |  |  |  |           |  |  |  |
| DISTANCE FROM OBSERVER                             |  |  | 27               |  |  |  | 57             |  |  |  |           |  |  |  |
| START                                              |  |  | 28               |  |  |  | 58             |  |  |  |           |  |  |  |
| STOP                                               |  |  | 29               |  |  |  | 59             |  |  |  |           |  |  |  |
| DIRECTION FROM OBSERVER                            |  |  | 30               |  |  |  | 60             |  |  |  |           |  |  |  |
| START                                              |  |  |                  |  |  |  |                |  |  |  |           |  |  |  |
| STOP                                               |  |  |                  |  |  |  |                |  |  |  |           |  |  |  |
| DESCRIBE EMISSIONS                                 |  |  |                  |  |  |  |                |  |  |  |           |  |  |  |
| START Coal Dust                                    |  |  |                  |  |  |  |                |  |  |  |           |  |  |  |
| STOP                                               |  |  |                  |  |  |  |                |  |  |  |           |  |  |  |
| EMISSION COLOR                                     |  |  |                  |  |  |  |                |  |  |  |           |  |  |  |
| START Black                                        |  |  |                  |  |  |  |                |  |  |  |           |  |  |  |
| STOP                                               |  |  |                  |  |  |  |                |  |  |  |           |  |  |  |
| PLUME TYPE CONTINUOUS                              |  |  |                  |  |  |  |                |  |  |  |           |  |  |  |
| START                                              |  |  |                  |  |  |  |                |  |  |  |           |  |  |  |
| STOP                                               |  |  |                  |  |  |  |                |  |  |  |           |  |  |  |
| FUGITIVE                                           |  |  |                  |  |  |  |                |  |  |  |           |  |  |  |
| INTERMITTENT                                       |  |  |                  |  |  |  |                |  |  |  |           |  |  |  |
| WATER DROPLETS PRESENT:                            |  |  |                  |  |  |  |                |  |  |  |           |  |  |  |
| NO                                                 |  |  |                  |  |  |  |                |  |  |  |           |  |  |  |
| YES                                                |  |  |                  |  |  |  |                |  |  |  |           |  |  |  |
| IF WATER DROPLET PLUME                             |  |  |                  |  |  |  |                |  |  |  |           |  |  |  |
| ATTACHED                                           |  |  |                  |  |  |  |                |  |  |  |           |  |  |  |
| DETACHED                                           |  |  |                  |  |  |  |                |  |  |  |           |  |  |  |
| POINT IN THE PLUME AT WHICH OPACITY WAS DETERMINED |  |  |                  |  |  |  |                |  |  |  |           |  |  |  |
| START OVER WALLS 8-10'                             |  |  |                  |  |  |  |                |  |  |  |           |  |  |  |
| STOP                                               |  |  |                  |  |  |  |                |  |  |  |           |  |  |  |
| DESCRIBE BACKGROUND                                |  |  |                  |  |  |  |                |  |  |  |           |  |  |  |
| START Sky                                          |  |  |                  |  |  |  |                |  |  |  |           |  |  |  |
| STOP                                               |  |  |                  |  |  |  |                |  |  |  |           |  |  |  |
| BACKGROUND COLOR                                   |  |  |                  |  |  |  |                |  |  |  |           |  |  |  |
| START White/Grey                                   |  |  |                  |  |  |  |                |  |  |  |           |  |  |  |
| STOP                                               |  |  |                  |  |  |  |                |  |  |  |           |  |  |  |
| SKY CONDITIONS                                     |  |  |                  |  |  |  |                |  |  |  |           |  |  |  |
| START Overcast                                     |  |  |                  |  |  |  |                |  |  |  |           |  |  |  |
| STOP                                               |  |  |                  |  |  |  |                |  |  |  |           |  |  |  |
| WIND SPEED                                         |  |  |                  |  |  |  |                |  |  |  |           |  |  |  |
| START 10-15                                        |  |  |                  |  |  |  |                |  |  |  |           |  |  |  |
| STOP                                               |  |  |                  |  |  |  |                |  |  |  |           |  |  |  |
| WIND DIRECTION                                     |  |  |                  |  |  |  |                |  |  |  |           |  |  |  |
| START NNW                                          |  |  |                  |  |  |  |                |  |  |  |           |  |  |  |
| STOP                                               |  |  |                  |  |  |  |                |  |  |  |           |  |  |  |
| AMBIENT TEMP.                                      |  |  |                  |  |  |  |                |  |  |  |           |  |  |  |
| START 64                                           |  |  |                  |  |  |  |                |  |  |  |           |  |  |  |
| STOP                                               |  |  |                  |  |  |  |                |  |  |  |           |  |  |  |
| WET BULB TEMP.                                     |  |  |                  |  |  |  |                |  |  |  |           |  |  |  |
| START 58                                           |  |  |                  |  |  |  |                |  |  |  |           |  |  |  |
| RH. percent                                        |  |  |                  |  |  |  |                |  |  |  |           |  |  |  |
| START 71                                           |  |  |                  |  |  |  |                |  |  |  |           |  |  |  |
| STOP                                               |  |  |                  |  |  |  |                |  |  |  |           |  |  |  |
| Source Layout Sketch                               |  |  |                  |  |  |  |                |  |  |  |           |  |  |  |
| Draw North Arrow                                   |  |  |                  |  |  |  |                |  |  |  |           |  |  |  |
|                                                    |  |  |                  |  |  |  |                |  |  |  |           |  |  |  |
| * - wet sprinklers didn't come on.                 |  |  |                  |  |  |  |                |  |  |  |           |  |  |  |
| COMMENTS                                           |  |  |                  |  |  |  |                |  |  |  |           |  |  |  |
| No Sun; ON ship; unloader went from                |  |  |                  |  |  |  |                |  |  |  |           |  |  |  |
| Bens #6-#5                                         |  |  |                  |  |  |  |                |  |  |  |           |  |  |  |
| Had to shut down moving loader. To dark            |  |  |                  |  |  |  |                |  |  |  |           |  |  |  |
| HAVE RECEIVED A COPY OF THESE OPACITY OBSERVATIONS |  |  |                  |  |  |  |                |  |  |  |           |  |  |  |
| SIGNATURE                                          |  |  |                  |  |  |  |                |  |  |  |           |  |  |  |
| TITLE                                              |  |  |                  |  |  |  |                |  |  |  |           |  |  |  |
| DATE                                               |  |  |                  |  |  |  |                |  |  |  |           |  |  |  |
| OBSERVER'S NAME (PRINT)                            |  |  |                  |  |  |  |                |  |  |  |           |  |  |  |
| Pamela J. McElroy                                  |  |  |                  |  |  |  |                |  |  |  |           |  |  |  |
| OBSERVER'S SIGNATURE                               |  |  |                  |  |  |  |                |  |  |  |           |  |  |  |
| Pamela J. McElroy                                  |  |  |                  |  |  |  |                |  |  |  |           |  |  |  |
| DATE                                               |  |  |                  |  |  |  |                |  |  |  |           |  |  |  |
| 2-22-89                                            |  |  |                  |  |  |  |                |  |  |  |           |  |  |  |
| ORGANIZATION                                       |  |  |                  |  |  |  |                |  |  |  |           |  |  |  |
| Hunter / ESE                                       |  |  |                  |  |  |  |                |  |  |  |           |  |  |  |
| CERTIFIED BY                                       |  |  |                  |  |  |  |                |  |  |  |           |  |  |  |
| Eastern Tech. Assoc.                               |  |  |                  |  |  |  |                |  |  |  |           |  |  |  |
| DATE                                               |  |  |                  |  |  |  |                |  |  |  |           |  |  |  |
| 9-8-88                                             |  |  |                  |  |  |  |                |  |  |  |           |  |  |  |
| VERIFIED BY                                        |  |  |                  |  |  |  |                |  |  |  |           |  |  |  |
| DATE                                               |  |  |                  |  |  |  |                |  |  |  |           |  |  |  |



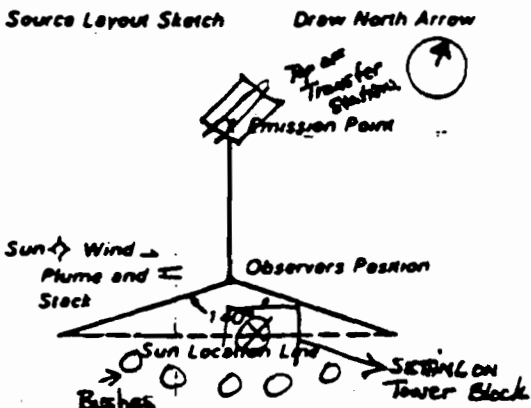
| SOURCE NAME                                                                                 |  |  | OBSERVATION DATE                   |  |  |  | START TIME               |  |  |  | STOP TIME |  |  |  |
|---------------------------------------------------------------------------------------------|--|--|------------------------------------|--|--|--|--------------------------|--|--|--|-----------|--|--|--|
| ST. JOHNS RIVER COAL TERMINAL                                                               |  |  | 2/22/89                            |  |  |  | 1100                     |  |  |  | 1200      |  |  |  |
| ADDRESS                                                                                     |  |  | SEC                                |  |  |  | SEC                      |  |  |  |           |  |  |  |
| 6020 WILLIAM MILLS ST.                                                                      |  |  | MIN 0 15 30 45                     |  |  |  | MIN 0 15 30 45           |  |  |  |           |  |  |  |
|                                                                                             |  |  | 1 30 0 0 0 0                       |  |  |  | 31                       |  |  |  |           |  |  |  |
| CITY                                                                                        |  |  | 2 0 0 0 0 0                        |  |  |  | 32                       |  |  |  |           |  |  |  |
| JACKSONVILLE                                                                                |  |  | 3 5 0 0 0 5                        |  |  |  | 33                       |  |  |  |           |  |  |  |
| STATE                                                                                       |  |  | 4 0 0 0 0 0                        |  |  |  | 34                       |  |  |  |           |  |  |  |
| FL                                                                                          |  |  | 5 0 0 0 0 0                        |  |  |  | 35                       |  |  |  |           |  |  |  |
| ZIP                                                                                         |  |  | 6 0 0 0 0 0                        |  |  |  | 36                       |  |  |  |           |  |  |  |
| 32226                                                                                       |  |  | 7 0 0 5 0 0                        |  |  |  | 37                       |  |  |  |           |  |  |  |
| PHONE                                                                                       |  |  | 8 0 0 0 0 0                        |  |  |  | 38                       |  |  |  |           |  |  |  |
| 904-751-7729                                                                                |  |  | 9 0 0 0 0 0                        |  |  |  | 39                       |  |  |  |           |  |  |  |
| SOURCE ID NUMBER                                                                            |  |  | 10                                 |  |  |  | 40                       |  |  |  |           |  |  |  |
| HOPPER - DRY                                                                                |  |  | 11                                 |  |  |  | 41                       |  |  |  |           |  |  |  |
| PROCESS EQUIPMENT                                                                           |  |  | 12                                 |  |  |  | 42                       |  |  |  |           |  |  |  |
| SHIP UNLOADER                                                                               |  |  | 13                                 |  |  |  | 43                       |  |  |  |           |  |  |  |
| OPERATING MODE                                                                              |  |  | 14                                 |  |  |  | 44                       |  |  |  |           |  |  |  |
| NORMAL                                                                                      |  |  | 15                                 |  |  |  | 45                       |  |  |  |           |  |  |  |
| CONTROL EQUIPMENT                                                                           |  |  | 16                                 |  |  |  | 46                       |  |  |  |           |  |  |  |
| BAG HOUSE                                                                                   |  |  | 17                                 |  |  |  | 47                       |  |  |  |           |  |  |  |
| OPERATING MODE                                                                              |  |  | 18                                 |  |  |  | 48                       |  |  |  |           |  |  |  |
| NORMAL                                                                                      |  |  | 19                                 |  |  |  | 49                       |  |  |  |           |  |  |  |
| DESCRIBE EMISSION POINT                                                                     |  |  | 20                                 |  |  |  | 50                       |  |  |  |           |  |  |  |
| 40' x 40' OPENING                                                                           |  |  | 21                                 |  |  |  | 51                       |  |  |  |           |  |  |  |
| START                                                                                       |  |  | 22                                 |  |  |  | 52                       |  |  |  |           |  |  |  |
| STOP                                                                                        |  |  | 23                                 |  |  |  | 53                       |  |  |  |           |  |  |  |
| HEIGHT ABOVE GROUND LEVEL                                                                   |  |  | 24                                 |  |  |  | 54                       |  |  |  |           |  |  |  |
| START 80' STOP ✓                                                                            |  |  | 25                                 |  |  |  | 55                       |  |  |  |           |  |  |  |
| HEIGHT RELATIVE TO OBSERVER                                                                 |  |  | 26                                 |  |  |  | 56                       |  |  |  |           |  |  |  |
| START 50' STOP ✓                                                                            |  |  | 27                                 |  |  |  | 57                       |  |  |  |           |  |  |  |
| DISTANCE FROM OBSERVER                                                                      |  |  | 28                                 |  |  |  | 58                       |  |  |  |           |  |  |  |
| START 70' STOP ✓                                                                            |  |  | 29                                 |  |  |  | 59                       |  |  |  |           |  |  |  |
| DIRECTION FROM OBSERVER                                                                     |  |  | 30                                 |  |  |  | 60                       |  |  |  |           |  |  |  |
| START N STOP ✓                                                                              |  |  | AVERAGE OPACITY FOR HIGHEST PERIOD |  |  |  | NUMBER OF READINGS ABOVE |  |  |  |           |  |  |  |
| DESCRIBE EMISSIONS                                                                          |  |  | 0.670                              |  |  |  | 0.6 % WERE 3             |  |  |  |           |  |  |  |
| START COAL DUST STOP ✓                                                                      |  |  | RANGE OF OPACITY READINGS          |  |  |  | MINIMUM 0 MAXIMUM 5      |  |  |  |           |  |  |  |
| EMISSION COLOR                                                                              |  |  | OBSERVER'S NAME (PRINT)            |  |  |  | THERESA A. BARNARD       |  |  |  |           |  |  |  |
| START BLACK STOP ✓                                                                          |  |  | OBSERVER'S SIGNATURE               |  |  |  | Theresa A. Barnard       |  |  |  |           |  |  |  |
| PLUME TYPE: CONTINUOUS <input type="checkbox"/>                                             |  |  | DATE                               |  |  |  | 2/22/89                  |  |  |  |           |  |  |  |
| FUGITIVE <input checked="" type="checkbox"/> INTERMITTENT <input type="checkbox"/>          |  |  | ORGANIZATION                       |  |  |  | HUNTER/ES&E              |  |  |  |           |  |  |  |
| WATER DROPLETS PRESENT: NO <input checked="" type="checkbox"/> YES <input type="checkbox"/> |  |  | CERTIFIED BY                       |  |  |  | LASTER TECH. ASSOC       |  |  |  |           |  |  |  |
| IF WATER DROPLET PLUME: ATTACHED <input type="checkbox"/> DETACHED <input type="checkbox"/> |  |  | VERIFIED BY                        |  |  |  | DATE                     |  |  |  |           |  |  |  |
| POINT IN THE PLUME AT WHICH OPACITY WAS DETERMINED                                          |  |  | 11/30/88                           |  |  |  |                          |  |  |  |           |  |  |  |
| START 3' ABOVE HOPPER STOP ✓                                                                |  |  |                                    |  |  |  |                          |  |  |  |           |  |  |  |
| DESCRIBE BACKGROUND                                                                         |  |  |                                    |  |  |  |                          |  |  |  |           |  |  |  |
| START SKY STOP ✓                                                                            |  |  |                                    |  |  |  |                          |  |  |  |           |  |  |  |
| BACKGROUND COLOR                                                                            |  |  |                                    |  |  |  |                          |  |  |  |           |  |  |  |
| START WHITE STOP ✓                                                                          |  |  |                                    |  |  |  |                          |  |  |  |           |  |  |  |
| SKY CONDITIONS                                                                              |  |  |                                    |  |  |  |                          |  |  |  |           |  |  |  |
| START OVERCAST STOP ✓                                                                       |  |  |                                    |  |  |  |                          |  |  |  |           |  |  |  |
| WIND SPEED                                                                                  |  |  |                                    |  |  |  |                          |  |  |  |           |  |  |  |
| START 15 mph STOP ✓                                                                         |  |  |                                    |  |  |  |                          |  |  |  |           |  |  |  |
| WIND DIRECTION                                                                              |  |  |                                    |  |  |  |                          |  |  |  |           |  |  |  |
| START N STOP ✓                                                                              |  |  |                                    |  |  |  |                          |  |  |  |           |  |  |  |
| AMBIENT TEMP                                                                                |  |  |                                    |  |  |  |                          |  |  |  |           |  |  |  |
| START 62°F STOP ✓                                                                           |  |  |                                    |  |  |  |                          |  |  |  |           |  |  |  |
| WET BULB TEMP.                                                                              |  |  |                                    |  |  |  |                          |  |  |  |           |  |  |  |
| 60°F                                                                                        |  |  |                                    |  |  |  |                          |  |  |  |           |  |  |  |
| RH. percent                                                                                 |  |  |                                    |  |  |  |                          |  |  |  |           |  |  |  |
| 90.70                                                                                       |  |  |                                    |  |  |  |                          |  |  |  |           |  |  |  |
| Source Layout Sketch                                                                        |  |  |                                    |  |  |  |                          |  |  |  |           |  |  |  |
| Draw North Arrow                                                                            |  |  |                                    |  |  |  |                          |  |  |  |           |  |  |  |
|                                                                                             |  |  |                                    |  |  |  |                          |  |  |  |           |  |  |  |
| <p>Comments hold number in corner indicates move to different hold.</p>                     |  |  |                                    |  |  |  |                          |  |  |  |           |  |  |  |
| I HAVE RECEIVED A COPY OF THESE OPACITY OBSERVATIONS                                        |  |  |                                    |  |  |  |                          |  |  |  |           |  |  |  |
| SIGNATURE                                                                                   |  |  |                                    |  |  |  |                          |  |  |  |           |  |  |  |
| TITLE                                                                                       |  |  |                                    |  |  |  |                          |  |  |  |           |  |  |  |
| DATE                                                                                        |  |  |                                    |  |  |  |                          |  |  |  |           |  |  |  |

| SOURCE NAME                                                                                                                                                        |  |  | OBSERVATION DATE                   |  |  |  | START TIME                         |  | STOP TIME |  |  |  |
|--------------------------------------------------------------------------------------------------------------------------------------------------------------------|--|--|------------------------------------|--|--|--|------------------------------------|--|-----------|--|--|--|
| ST. JOHNS RIVER COAL TERMINAL                                                                                                                                      |  |  | 2/22/89                            |  |  |  | 1215                               |  | 1230      |  |  |  |
| ADDRESS                                                                                                                                                            |  |  | SEC                                |  |  |  | SEC                                |  | TRC       |  |  |  |
| 6020 WILLIAM MILLS ST.                                                                                                                                             |  |  | MIN                                |  |  |  | MIN                                |  | MIN       |  |  |  |
|                                                                                                                                                                    |  |  | 0                                  |  |  |  | 0                                  |  | 0         |  |  |  |
|                                                                                                                                                                    |  |  | 15                                 |  |  |  | 15                                 |  | 15        |  |  |  |
|                                                                                                                                                                    |  |  | 30                                 |  |  |  | 30                                 |  | 30        |  |  |  |
|                                                                                                                                                                    |  |  | 45                                 |  |  |  | 45                                 |  | 45        |  |  |  |
|                                                                                                                                                                    |  |  | 1                                  |  |  |  | 31                                 |  |           |  |  |  |
| CITY                                                                                                                                                               |  |  | 2                                  |  |  |  | 32                                 |  |           |  |  |  |
| JACKSONVILLE                                                                                                                                                       |  |  | 3                                  |  |  |  | 33                                 |  |           |  |  |  |
| STATE                                                                                                                                                              |  |  | 4                                  |  |  |  | 34                                 |  |           |  |  |  |
| FL                                                                                                                                                                 |  |  | 5                                  |  |  |  | 35                                 |  |           |  |  |  |
| ZIP                                                                                                                                                                |  |  | 6                                  |  |  |  | 36                                 |  |           |  |  |  |
| 32224                                                                                                                                                              |  |  | 7                                  |  |  |  | 37                                 |  |           |  |  |  |
| PHONE                                                                                                                                                              |  |  | 8                                  |  |  |  | 38                                 |  |           |  |  |  |
| 904-751-7729                                                                                                                                                       |  |  | 9                                  |  |  |  | 39                                 |  |           |  |  |  |
| SOURCE ID NUMBER                                                                                                                                                   |  |  | 10                                 |  |  |  | 40                                 |  |           |  |  |  |
| TRANSFER STN #1                                                                                                                                                    |  |  | 11                                 |  |  |  | 41                                 |  |           |  |  |  |
| PROCESS EQUIPMENT                                                                                                                                                  |  |  | 12                                 |  |  |  | 42                                 |  |           |  |  |  |
| AIR CONVEYOR                                                                                                                                                       |  |  | 13                                 |  |  |  | 43                                 |  |           |  |  |  |
| TRANSFER STATION                                                                                                                                                   |  |  | 14                                 |  |  |  | 44                                 |  |           |  |  |  |
| OPERATING MODE                                                                                                                                                     |  |  | 15                                 |  |  |  | 45                                 |  |           |  |  |  |
| NORMAL                                                                                                                                                             |  |  | 16                                 |  |  |  | 46                                 |  |           |  |  |  |
| CONTROL EQUIPMENT                                                                                                                                                  |  |  | 17                                 |  |  |  | 47                                 |  |           |  |  |  |
| WET                                                                                                                                                                |  |  | 18                                 |  |  |  | 48                                 |  |           |  |  |  |
| SUPPRESSION/ENCLOSURE                                                                                                                                              |  |  | 19                                 |  |  |  | 49                                 |  |           |  |  |  |
| NORMAL                                                                                                                                                             |  |  | 20                                 |  |  |  | 50                                 |  |           |  |  |  |
| DESCRIBE EMISSION POINT                                                                                                                                            |  |  | 21                                 |  |  |  | 51                                 |  |           |  |  |  |
| START                                                                                                                                                              |  |  | 22                                 |  |  |  | 52                                 |  |           |  |  |  |
| STOP                                                                                                                                                               |  |  | 23                                 |  |  |  | 53                                 |  |           |  |  |  |
| HEIGHT ABOVE GROUND LEVEL                                                                                                                                          |  |  | 24                                 |  |  |  | 54                                 |  |           |  |  |  |
| START 30' STOP ✓                                                                                                                                                   |  |  | 25                                 |  |  |  | 55                                 |  |           |  |  |  |
| HEIGHT RELATIVE TO OBSERVER                                                                                                                                        |  |  | 26                                 |  |  |  | 56                                 |  |           |  |  |  |
| START 30' STOP ✓                                                                                                                                                   |  |  | 27                                 |  |  |  | 57                                 |  |           |  |  |  |
| DISTANCE FROM OBSERVER                                                                                                                                             |  |  | 28                                 |  |  |  | 58                                 |  |           |  |  |  |
| START 70' STOP ✓                                                                                                                                                   |  |  | 29                                 |  |  |  | 59                                 |  |           |  |  |  |
| DIRECTION FROM OBSERVER                                                                                                                                            |  |  | 30                                 |  |  |  | 60                                 |  |           |  |  |  |
| START NE STOP ✓                                                                                                                                                    |  |  | AVERAGE OPACITY FOR HIGHEST PERIOD |  |  |  | NUMBER OF READINGS ABOVE 0% WERE 0 |  |           |  |  |  |
| DESCRIBE EMISSIONS                                                                                                                                                 |  |  | RANGE OF OPACITY READINGS          |  |  |  | MINIMUM 0 MAXIMUM 0                |  |           |  |  |  |
| START NONE STOP                                                                                                                                                    |  |  | OBSERVER'S NAME (PRINT)            |  |  |  | THERESA A. BARNARD                 |  |           |  |  |  |
| EMISSION COLOR                                                                                                                                                     |  |  | OBSERVER'S SIGNATURE               |  |  |  | DATE                               |  |           |  |  |  |
| START STOP                                                                                                                                                         |  |  | Theresa A. Barnard                 |  |  |  | 2/22/89                            |  |           |  |  |  |
| PLUME TYPE: CONTINUOUS <input type="checkbox"/>                                                                                                                    |  |  | ORGANIZATION                       |  |  |  | HUNTER/ESG                         |  |           |  |  |  |
| FUGITIVE <input checked="" type="checkbox"/> INTERMITTENT <input type="checkbox"/>                                                                                 |  |  | CERTIFIED BY                       |  |  |  | DATE                               |  |           |  |  |  |
| WATER DROPLETS PRESENT: NO <input checked="" type="checkbox"/> YES <input type="checkbox"/>                                                                        |  |  | EASTERN TECH. ASSOC                |  |  |  | 11/30/88                           |  |           |  |  |  |
| IF WATER DROPLET PLUME ATTACHED <input type="checkbox"/> DETACHED <input type="checkbox"/>                                                                         |  |  | VERIFIED BY                        |  |  |  | DATE                               |  |           |  |  |  |
| POINT IN THE PLUME AT WHICH OPACITY WAS DETERMINED                                                                                                                 |  |  | TITLE                              |  |  |  | DATE                               |  |           |  |  |  |
| START 1 ABOVE STOP ✓                                                                                                                                               |  |  | DATE                               |  |  |  | DATE                               |  |           |  |  |  |
| DESCRIBE BACKGROUND                                                                                                                                                |  |  | DATE                               |  |  |  | DATE                               |  |           |  |  |  |
| START SKY STOP ✓                                                                                                                                                   |  |  | DATE                               |  |  |  | DATE                               |  |           |  |  |  |
| BACKGROUND COLOR                                                                                                                                                   |  |  | DATE                               |  |  |  | DATE                               |  |           |  |  |  |
| START WHITE STOP ✓                                                                                                                                                 |  |  | DATE                               |  |  |  | DATE                               |  |           |  |  |  |
| SKY CONDITIONS                                                                                                                                                     |  |  | DATE                               |  |  |  | DATE                               |  |           |  |  |  |
| START OVER STOP ✓                                                                                                                                                  |  |  | DATE                               |  |  |  | DATE                               |  |           |  |  |  |
| WIND SPEED                                                                                                                                                         |  |  | DATE                               |  |  |  | DATE                               |  |           |  |  |  |
| START 15 mph STOP                                                                                                                                                  |  |  | DATE                               |  |  |  | DATE                               |  |           |  |  |  |
| WIND DIRECTION                                                                                                                                                     |  |  | DATE                               |  |  |  | DATE                               |  |           |  |  |  |
| START N NW STOP ✓                                                                                                                                                  |  |  | DATE                               |  |  |  | DATE                               |  |           |  |  |  |
| AMBIENT TEMP.                                                                                                                                                      |  |  | DATE                               |  |  |  | DATE                               |  |           |  |  |  |
| START 61°F STOP ✓                                                                                                                                                  |  |  | DATE                               |  |  |  | DATE                               |  |           |  |  |  |
| WET BULB TEMP.                                                                                                                                                     |  |  | DATE                               |  |  |  | DATE                               |  |           |  |  |  |
| 58°F                                                                                                                                                               |  |  | DATE                               |  |  |  | DATE                               |  |           |  |  |  |
| RH percent                                                                                                                                                         |  |  | DATE                               |  |  |  | DATE                               |  |           |  |  |  |
| 84%                                                                                                                                                                |  |  | DATE                               |  |  |  | DATE                               |  |           |  |  |  |
| Source Layout Sketch                                                                                                                                               |  |  | DATE                               |  |  |  | DATE                               |  |           |  |  |  |
| Draw North Arrow                                                                                                                                                   |  |  | DATE                               |  |  |  | DATE                               |  |           |  |  |  |
|                                                                                                                                                                    |  |  | DATE                               |  |  |  | DATE                               |  |           |  |  |  |
| <p>Source Layout Sketch</p> <p>Draw North Arrow</p> <p>Stack</p> <p>Plume and Stack</p> <p>Sun Location Line</p> <p>Observer's Position</p> <p>Wind</p> <p>Sun</p> |  |  | DATE                               |  |  |  | DATE                               |  |           |  |  |  |
| COMMENTS                                                                                                                                                           |  |  | DATE                               |  |  |  | DATE                               |  |           |  |  |  |
| FROM SOUTH SIDE OF                                                                                                                                                 |  |  | DATE                               |  |  |  | DATE                               |  |           |  |  |  |
| TRANSFER STATION                                                                                                                                                   |  |  | DATE                               |  |  |  | DATE                               |  |           |  |  |  |
| HAVE RECEIVED A COPY OF THESE OPACITY OBSERVATIONS                                                                                                                 |  |  | DATE                               |  |  |  | DATE                               |  |           |  |  |  |
| SIGNATURE                                                                                                                                                          |  |  | DATE                               |  |  |  | DATE                               |  |           |  |  |  |
| TITLE                                                                                                                                                              |  |  | DATE                               |  |  |  | DATE                               |  |           |  |  |  |
| DATE                                                                                                                                                               |  |  | DATE                               |  |  |  | DATE                               |  |           |  |  |  |

|                                                                                                |  |  |                                                                                                |  |                                                                                      |  |                   |  |
|------------------------------------------------------------------------------------------------|--|--|------------------------------------------------------------------------------------------------|--|--------------------------------------------------------------------------------------|--|-------------------|--|
| SOURCE NAME<br>ST. JOHNS RIVER COAL TERMINAL                                                   |  |  | OBSERVATION DATE<br>AL 2/22/89                                                                 |  | START TIME<br>1230                                                                   |  | STOP TIME<br>1245 |  |
| ADDRESS<br>6020 WILLIAM MILLS ST.                                                              |  |  | <div>SEC</div> <div>MIN</div> <div>0</div> <div>15</div> <div>30</div> <div>45</div>           |  | <div>SEC</div> <div>MIN</div> <div>0</div> <div>15</div> <div>30</div> <div>45</div> |  |                   |  |
| CITY<br>JACKSONVILLE                                                                           |  |  | STATE<br>FL                                                                                    |  | ZIP<br>32226                                                                         |  |                   |  |
| PHONE<br>904-751-7729                                                                          |  |  | SOURCE ID NUMBER<br>TRANSFER STN #1                                                            |  |                                                                                      |  |                   |  |
| PROCESS EQUIPMENT<br>TRANSFER STATION                                                          |  |  | OPERATING MODE<br>NORMAL                                                                       |  |                                                                                      |  |                   |  |
| CONTROL EQUIPMENT<br>WET SUPPRESSION/ENCLOSURE                                                 |  |  | OPERATING MODE<br>NORMAL                                                                       |  |                                                                                      |  |                   |  |
| DESCRIBE EMISSION POINT                                                                        |  |  |                                                                                                |  |                                                                                      |  |                   |  |
| START                                                                                          |  |  | STOP                                                                                           |  |                                                                                      |  |                   |  |
| HEIGHT ABOVE GROUND LEVEL<br>START 30' STOP ✓                                                  |  |  | HEIGHT RELATIVE TO OBSERVER<br>START 30' STOP ✓                                                |  |                                                                                      |  |                   |  |
| DISTANCE FROM OBSERVER<br>START 70' STOP ✓                                                     |  |  | DIRECTION FROM OBSERVER<br>START SE STOP ✓                                                     |  |                                                                                      |  |                   |  |
| DESCRIBE EMISSIONS                                                                             |  |  |                                                                                                |  |                                                                                      |  |                   |  |
| START NONE                                                                                     |  |  | STOP                                                                                           |  |                                                                                      |  |                   |  |
| EMISSION COLOR                                                                                 |  |  | PLUME TYPE: CONTINUOUS <input type="checkbox"/>                                                |  |                                                                                      |  |                   |  |
| START                                                                                          |  |  | STOP                                                                                           |  |                                                                                      |  |                   |  |
| WATER DROPLETS PRESENT:<br>NO <input checked="" type="checkbox"/> YES <input type="checkbox"/> |  |  | IF WATER DROPLET PLUME:<br>ATTACHED <input type="checkbox"/> DETACHED <input type="checkbox"/> |  |                                                                                      |  |                   |  |
| POINT IN THE PLUME AT WHICH OPACITY WAS DETERMINED<br>START ABOVE<br>TRANSFER STATION          |  |  |                                                                                                |  |                                                                                      |  |                   |  |
| DESCRIBE BACKGROUND                                                                            |  |  |                                                                                                |  |                                                                                      |  |                   |  |
| START SKY                                                                                      |  |  | STOP ✓                                                                                         |  |                                                                                      |  |                   |  |
| BACKGROUND COLOR                                                                               |  |  | SKY CONDITIONS                                                                                 |  |                                                                                      |  |                   |  |
| START WHITE STOP ✓                                                                             |  |  | START OVERCAST STOP ✓                                                                          |  |                                                                                      |  |                   |  |
| WIND SPEED                                                                                     |  |  | WIND DIRECTION                                                                                 |  |                                                                                      |  |                   |  |
| START 15 mph STOP ✓                                                                            |  |  | START N NW STOP ✓                                                                              |  |                                                                                      |  |                   |  |
| AMBIENT TEMP.                                                                                  |  |  | WET BULB TEMP.                                                                                 |  | RH, percent                                                                          |  |                   |  |
| START 61°F STOP ✓                                                                              |  |  | 58°F                                                                                           |  | 84%                                                                                  |  |                   |  |
| <div>Source Layout Sketch</div> <div>Draw North Arrow</div>                                    |  |  |                                                                                                |  |                                                                                      |  |                   |  |
| COMMENTS<br>FROM NORTH SIDE OF<br>TRANSFER STATION                                             |  |  |                                                                                                |  |                                                                                      |  |                   |  |
| I HAVE RECEIVED A COPY OF THESE OPACITY OBSERVATIONS                                           |  |  |                                                                                                |  |                                                                                      |  |                   |  |
| SIGNATURE                                                                                      |  |  |                                                                                                |  |                                                                                      |  |                   |  |
| TITLE                                                                                          |  |  |                                                                                                |  |                                                                                      |  |                   |  |
| DATE                                                                                           |  |  |                                                                                                |  |                                                                                      |  |                   |  |
| OBSERVER'S NAME (PRINT)<br>THERESA A. BARNARD                                                  |  |  |                                                                                                |  |                                                                                      |  |                   |  |
| OBSERVER'S SIGNATURE<br>Theresa A. Barnard                                                     |  |  |                                                                                                |  |                                                                                      |  | DATE<br>2/22/89   |  |
| ORGANIZATION<br>HUNTER/ESG                                                                     |  |  |                                                                                                |  |                                                                                      |  |                   |  |
| CERTIFIED BY<br>EASTERN TECH. ASSOC                                                            |  |  |                                                                                                |  |                                                                                      |  | DATE<br>11/30/88  |  |
| VERIFIED BY                                                                                    |  |  |                                                                                                |  |                                                                                      |  | DATE              |  |

|                                                                                                       |  |  |                                                                                                                                   |  |  |  |                                           |  |  |  |                                          |  |  |  |
|-------------------------------------------------------------------------------------------------------|--|--|-----------------------------------------------------------------------------------------------------------------------------------|--|--|--|-------------------------------------------|--|--|--|------------------------------------------|--|--|--|
| SOURCE NAME<br><u>St. Johns River Coal Terminal</u>                                                   |  |  | OBSERVATION DATE<br><u>2-22-89</u>                                                                                                |  |  |  | START TIME<br><u>11:00</u> / <u>11:20</u> |  |  |  | STOP TIME<br><u>11:15</u> / <u>11:35</u> |  |  |  |
| ADDRESS<br><u>6020 William Mills St.</u>                                                              |  |  | SEC<br>MIN 0 15 30 45                                                                                                             |  |  |  | SEC<br>MIN 0 15 30 45                     |  |  |  | SEC<br>MIN 0 15 30 45                    |  |  |  |
| CITY<br><u>Jacksonville</u>                                                                           |  |  | STATE<br><u>Florida</u>                                                                                                           |  |  |  | ZIP<br><u>32226</u>                       |  |  |  |                                          |  |  |  |
| PHONE<br><u>904-751-7729</u>                                                                          |  |  | SOURCE ID NUMBER<br><u>#3</u>                                                                                                     |  |  |  |                                           |  |  |  |                                          |  |  |  |
| PROCESS EQUIPMENT<br><u>Coal Conveyor CT-2</u>                                                        |  |  | OPERATING MODE<br><u>Normal</u>                                                                                                   |  |  |  |                                           |  |  |  |                                          |  |  |  |
| CONTROL EQUIPMENT<br><u>Enclosed Upstream Suppressor</u>                                              |  |  | OPERATING MODE<br><u>Normal</u>                                                                                                   |  |  |  |                                           |  |  |  |                                          |  |  |  |
| DESCRIBE EMISSION POINT<br><u>START Covered Conveyor STOP</u> ✓                                       |  |  |                                                                                                                                   |  |  |  |                                           |  |  |  |                                          |  |  |  |
| HEIGHT ABOVE GROUND LEVEL<br><u>START 8' STOP</u> ✓                                                   |  |  | HEIGHT RELATIVE TO OBSERVER<br><u>START 4' under STOP</u> ✓                                                                       |  |  |  |                                           |  |  |  |                                          |  |  |  |
| DISTANCE FROM OBSERVER<br><u>START 4' under STOP</u> ✓                                                |  |  | DIRECTION FROM OBSERVER<br><u>START WNW STOP</u> ✓                                                                                |  |  |  |                                           |  |  |  |                                          |  |  |  |
| DESCRIBE EMISSIONS<br><u>START None STOP</u> ✓                                                        |  |  |                                                                                                                                   |  |  |  |                                           |  |  |  |                                          |  |  |  |
| EMISSION COLOR<br><u>START None STOP</u> ✓                                                            |  |  | PLUME TYPE CONTINUOUS <input type="checkbox"/> FUGITIVE <input checked="" type="checkbox"/> INTERMITTENT <input type="checkbox"/> |  |  |  |                                           |  |  |  |                                          |  |  |  |
| WATER DROPLETS PRESENT:<br><u>NO</u> <input checked="" type="checkbox"/> YES <input type="checkbox"/> |  |  | IF WATER DROPLET PLUME<br><u>ATTACHED</u> <input type="checkbox"/> DETACHED <input type="checkbox"/>                              |  |  |  |                                           |  |  |  |                                          |  |  |  |
| POINT IN THE PLUME AT WHICH OPACITY WAS DETERMINED<br><u>over outside COVERED CONVEYOR STOP</u> ✓     |  |  |                                                                                                                                   |  |  |  |                                           |  |  |  |                                          |  |  |  |
| DESCRIBE BACKGROUND<br><u>START Ground/Vegetation STOP</u> ✓                                          |  |  |                                                                                                                                   |  |  |  |                                           |  |  |  |                                          |  |  |  |
| BACKGROUND COLOR<br><u>START Brownish STOP</u> ✓                                                      |  |  | SKY CONDITIONS<br><u>START Overcast STOP</u> ✓                                                                                    |  |  |  |                                           |  |  |  |                                          |  |  |  |
| WIND SPEED<br><u>START 8-10 mph STOP</u> ✓                                                            |  |  | WIND DIRECTION<br><u>START NNE STOP</u> ✓                                                                                         |  |  |  |                                           |  |  |  |                                          |  |  |  |
| AMBIENT TEMP.<br><u>START 61 STOP</u> ✓                                                               |  |  | WET BULB TEMP.<br><u>58</u>                                                                                                       |  |  |  | RH, percent<br><u>84</u>                  |  |  |  |                                          |  |  |  |
|                                                                                                       |  |  |                                                                                                                                   |  |  |  |                                           |  |  |  |                                          |  |  |  |
|                                                                                                       |  |  |                                                                                                                                   |  |  |  |                                           |  |  |  |                                          |  |  |  |
|                                                                                                       |  |  |                                                                                                                                   |  |  |  |                                           |  |  |  |                                          |  |  |  |
|                                                                                                       |  |  |                                                                                                                                   |  |  |  |                                           |  |  |  |                                          |  |  |  |
|                                                                                                       |  |  |                                                                                                                                   |  |  |  |                                           |  |  |  |                                          |  |  |  |
|                                                                                                       |  |  |                                                                                                                                   |  |  |  |                                           |  |  |  |                                          |  |  |  |
|                                                                                                       |  |  |                                                                                                                                   |  |  |  |                                           |  |  |  |                                          |  |  |  |
|                                                                                                       |  |  |                                                                                                                                   |  |  |  |                                           |  |  |  |                                          |  |  |  |
|                                                                                                       |  |  |                                                                                                                                   |  |  |  |                                           |  |  |  |                                          |  |  |  |
|                                                                                                       |  |  |                                                                                                                                   |  |  |  |                                           |  |  |  |                                          |  |  |  |
| AVERAGE OPACITY FOR HIGHEST PERIOD <u>0</u>                                                           |  |  | NUMBER OF READINGS ABOVE <u>0</u> % WERE <u>0</u>                                                                                 |  |  |  |                                           |  |  |  |                                          |  |  |  |
| RANGE OF OPACITY READINGS<br>MINIMUM <u>0</u> MAXIMUM <u>0</u>                                        |  |  |                                                                                                                                   |  |  |  |                                           |  |  |  |                                          |  |  |  |
| OBSERVER'S NAME (PRINT)<br><u>Pamela Jean McElroy</u>                                                 |  |  |                                                                                                                                   |  |  |  |                                           |  |  |  |                                          |  |  |  |
| OBSERVER'S SIGNATURE<br><u>Pamela J. McElroy</u>                                                      |  |  | DATE<br><u>2-22-89</u>                                                                                                            |  |  |  |                                           |  |  |  |                                          |  |  |  |
| ORGANIZATION<br><u>HONTER/ESE</u>                                                                     |  |  |                                                                                                                                   |  |  |  |                                           |  |  |  |                                          |  |  |  |
| CERTIFIED BY<br><u>Eastern Tech. Assoc.</u>                                                           |  |  | DATE<br><u>9-8-1988</u>                                                                                                           |  |  |  |                                           |  |  |  |                                          |  |  |  |
| VERIFIED BY                                                                                           |  |  | DATE                                                                                                                              |  |  |  |                                           |  |  |  |                                          |  |  |  |

| SOURCE NAME                                                                        |  |  | OBSERVATION DATE     |   |    |    |    | START TIME |   |    |    |    | STOP TIME |  |  |  |  |
|------------------------------------------------------------------------------------|--|--|----------------------|---|----|----|----|------------|---|----|----|----|-----------|--|--|--|--|
| ST. Johns River Coal Terminal                                                      |  |  | 2-22-89              |   |    |    |    | 11:45      |   |    |    |    | 12:00     |  |  |  |  |
| ADDRESS                                                                            |  |  | SEC                  |   |    |    |    | SEC        |   |    |    |    |           |  |  |  |  |
| 6020 William Mill St.                                                              |  |  | MIN                  | 0 | 15 | 30 | 45 | MIN        | 0 | 15 | 30 | 45 |           |  |  |  |  |
| CITY                                                                               |  |  | 1                    | 0 | 0  | 0  | 0  | 31         |   |    |    |    |           |  |  |  |  |
| Jacksonville                                                                       |  |  | 2                    | 0 | 0  | 0  | 0  | 32         |   |    |    |    |           |  |  |  |  |
| STATE                                                                              |  |  | 3                    | 0 | 0  | 0  | 0  | 33         |   |    |    |    |           |  |  |  |  |
| Florida                                                                            |  |  | 4                    | 0 | 0  | 0  | 0  | 34         |   |    |    |    |           |  |  |  |  |
| ZIP                                                                                |  |  | 5                    | 0 | 0  | 0  | 0  | 35         |   |    |    |    |           |  |  |  |  |
| 32226                                                                              |  |  | 6                    | 0 | 0  | 0  | 0  | 36         |   |    |    |    |           |  |  |  |  |
| PHONE                                                                              |  |  | 7                    | 0 | 0  | 0  | 0  | 37         |   |    |    |    |           |  |  |  |  |
| 904-751-7729                                                                       |  |  | 8                    | 0 | 0  | 0  | 0  | 38         |   |    |    |    |           |  |  |  |  |
| SOURCE ID NUMBER                                                                   |  |  | 9                    | 0 | 0  | 0  | 0  | 39         |   |    |    |    |           |  |  |  |  |
| #4 Transfer Station                                                                |  |  | 10                   | 0 | 0  | 0  | 0  | 40         |   |    |    |    |           |  |  |  |  |
| LOCATION                                                                           |  |  | 11                   | 0 | 0  | 0  | 0  | 41         |   |    |    |    |           |  |  |  |  |
| PROCESS EQUIPMENT                                                                  |  |  | 12                   | 0 | 0  | 0  | 0  | 42         |   |    |    |    |           |  |  |  |  |
| Coal Conveyor Transfer Sta.                                                        |  |  | 13                   | 0 | 0  | 0  | 0  | 43         |   |    |    |    |           |  |  |  |  |
| OPERATING MODE                                                                     |  |  | 14                   | 0 | 0  | 0  | 0  | 44         |   |    |    |    |           |  |  |  |  |
| Normal                                                                             |  |  | 15                   | 0 | 0  | 0  | 0  | 45         |   |    |    |    |           |  |  |  |  |
| CONTROL EQUIPMENT                                                                  |  |  | 16                   |   |    |    |    | 46         |   |    |    |    |           |  |  |  |  |
| Wet Suppression                                                                    |  |  | 17                   |   |    |    |    | 47         |   |    |    |    |           |  |  |  |  |
| OPERATING MODE                                                                     |  |  | 18                   |   |    |    |    | 48         |   |    |    |    |           |  |  |  |  |
| Normal                                                                             |  |  | 19                   |   |    |    |    | 49         |   |    |    |    |           |  |  |  |  |
| DESCRIBE EMISSION POINT                                                            |  |  | 20                   |   |    |    |    | 50         |   |    |    |    |           |  |  |  |  |
| START COVERED CONVEYOR STOP                                                        |  |  | 21                   |   |    |    |    | 51         |   |    |    |    |           |  |  |  |  |
| START TRANSFER STATION STOP                                                        |  |  | 22                   |   |    |    |    | 52         |   |    |    |    |           |  |  |  |  |
| HEIGHT ABOVE GROUND LEVEL                                                          |  |  | 23                   |   |    |    |    | 53         |   |    |    |    |           |  |  |  |  |
| START 30' STOP ✓                                                                   |  |  | 24                   |   |    |    |    | 54         |   |    |    |    |           |  |  |  |  |
| HEIGHT RELATIVE TO OBSERVER                                                        |  |  | 25                   |   |    |    |    | 55         |   |    |    |    |           |  |  |  |  |
| START 30' STOP ✓                                                                   |  |  | 26                   |   |    |    |    | 56         |   |    |    |    |           |  |  |  |  |
| DISTANCE FROM OBSERVER                                                             |  |  | 27                   |   |    |    |    | 57         |   |    |    |    |           |  |  |  |  |
| START 120' STOP ✓                                                                  |  |  | 28                   |   |    |    |    | 58         |   |    |    |    |           |  |  |  |  |
| DIRECTION FROM OBSERVER                                                            |  |  | 29                   |   |    |    |    | 59         |   |    |    |    |           |  |  |  |  |
| START NNW STOP ✓                                                                   |  |  | 30                   |   |    |    |    | 60         |   |    |    |    |           |  |  |  |  |
| DESCRIBE EMISSIONS                                                                 |  |  |                      |   |    |    |    |            |   |    |    |    |           |  |  |  |  |
| START None STOP ✓                                                                  |  |  |                      |   |    |    |    |            |   |    |    |    |           |  |  |  |  |
| EMISSION COLOR                                                                     |  |  |                      |   |    |    |    |            |   |    |    |    |           |  |  |  |  |
| START None STOP ✓                                                                  |  |  |                      |   |    |    |    |            |   |    |    |    |           |  |  |  |  |
| PLUME TYPE CONTINUOUS <input type="checkbox"/>                                     |  |  |                      |   |    |    |    |            |   |    |    |    |           |  |  |  |  |
| FUGITIVE <input checked="" type="checkbox"/> INTERMITTENT <input type="checkbox"/> |  |  |                      |   |    |    |    |            |   |    |    |    |           |  |  |  |  |
| WATER DROPLETS PRESENT:                                                            |  |  |                      |   |    |    |    |            |   |    |    |    |           |  |  |  |  |
| NO <input checked="" type="checkbox"/> YES <input type="checkbox"/>                |  |  |                      |   |    |    |    |            |   |    |    |    |           |  |  |  |  |
| WATER DROPLET PLUME                                                                |  |  |                      |   |    |    |    |            |   |    |    |    |           |  |  |  |  |
| ATTACHED <input type="checkbox"/> DETACHED <input type="checkbox"/>                |  |  |                      |   |    |    |    |            |   |    |    |    |           |  |  |  |  |
| POINT IN THE PLUME AT WHICH OPACITY WAS DETERMINED                                 |  |  |                      |   |    |    |    |            |   |    |    |    |           |  |  |  |  |
| START Outside of Baghouse STOP ✓                                                   |  |  |                      |   |    |    |    |            |   |    |    |    |           |  |  |  |  |
| DESCRIBE BACKGROUND                                                                |  |  |                      |   |    |    |    |            |   |    |    |    |           |  |  |  |  |
| START Sky STOP ✓                                                                   |  |  |                      |   |    |    |    |            |   |    |    |    |           |  |  |  |  |
| BACKGROUND COLOR                                                                   |  |  |                      |   |    |    |    |            |   |    |    |    |           |  |  |  |  |
| START Grey STOP                                                                    |  |  |                      |   |    |    |    |            |   |    |    |    |           |  |  |  |  |
| SKY CONDITIONS                                                                     |  |  |                      |   |    |    |    |            |   |    |    |    |           |  |  |  |  |
| START Overcast STOP                                                                |  |  |                      |   |    |    |    |            |   |    |    |    |           |  |  |  |  |
| WIND SPEED                                                                         |  |  |                      |   |    |    |    |            |   |    |    |    |           |  |  |  |  |
| START 4-6 STOP ✓                                                                   |  |  |                      |   |    |    |    |            |   |    |    |    |           |  |  |  |  |
| WIND DIRECTION                                                                     |  |  |                      |   |    |    |    |            |   |    |    |    |           |  |  |  |  |
| START NNW STOP ✓                                                                   |  |  |                      |   |    |    |    |            |   |    |    |    |           |  |  |  |  |
| AMBIENT TEMP.                                                                      |  |  |                      |   |    |    |    |            |   |    |    |    |           |  |  |  |  |
| START 61 STOP ✓                                                                    |  |  |                      |   |    |    |    |            |   |    |    |    |           |  |  |  |  |
| WET BULB TEMP.                                                                     |  |  |                      |   |    |    |    |            |   |    |    |    |           |  |  |  |  |
| 58                                                                                 |  |  |                      |   |    |    |    |            |   |    |    |    |           |  |  |  |  |
| RH. percent                                                                        |  |  |                      |   |    |    |    |            |   |    |    |    |           |  |  |  |  |
| 64                                                                                 |  |  |                      |   |    |    |    |            |   |    |    |    |           |  |  |  |  |
| Source Layout Sketch                                                               |  |  |                      |   |    |    |    |            |   |    |    |    |           |  |  |  |  |
|                                                                                    |  |  |                      |   |    |    |    |            |   |    |    |    |           |  |  |  |  |
| Draw North Arrow                                                                   |  |  |                      |   |    |    |    |            |   |    |    |    |           |  |  |  |  |
| Transfer Station Hopper                                                            |  |  |                      |   |    |    |    |            |   |    |    |    |           |  |  |  |  |
| Emission Point                                                                     |  |  |                      |   |    |    |    |            |   |    |    |    |           |  |  |  |  |
| Dust Collector                                                                     |  |  |                      |   |    |    |    |            |   |    |    |    |           |  |  |  |  |
| Baghouse                                                                           |  |  |                      |   |    |    |    |            |   |    |    |    |           |  |  |  |  |
| Observer Position                                                                  |  |  |                      |   |    |    |    |            |   |    |    |    |           |  |  |  |  |
| Sun Location Line                                                                  |  |  |                      |   |    |    |    |            |   |    |    |    |           |  |  |  |  |
| Sun's Wind Plume and Stack                                                         |  |  |                      |   |    |    |    |            |   |    |    |    |           |  |  |  |  |
| 1400'                                                                              |  |  |                      |   |    |    |    |            |   |    |    |    |           |  |  |  |  |
| AVERAGE OPACITY FOR HIGHEST PERIOD                                                 |  |  | 0                    |   |    |    |    |            |   |    |    |    |           |  |  |  |  |
| NUMBER OF READINGS ABOVE 0% WERE                                                   |  |  | 0                    |   |    |    |    |            |   |    |    |    |           |  |  |  |  |
| RANGE OF OPACITY READINGS                                                          |  |  |                      |   |    |    |    |            |   |    |    |    |           |  |  |  |  |
| MINIMUM                                                                            |  |  | 0                    |   |    |    |    |            |   |    |    |    |           |  |  |  |  |
| MAXIMUM                                                                            |  |  | 0                    |   |    |    |    |            |   |    |    |    |           |  |  |  |  |
| OBSERVER'S NAME (PRINT)                                                            |  |  | Pamela J. McElroy    |   |    |    |    |            |   |    |    |    |           |  |  |  |  |
| OBSERVER'S SIGNATURE                                                               |  |  | Pamela J. McElroy    |   |    |    |    |            |   |    |    |    |           |  |  |  |  |
| DATE                                                                               |  |  | 2-22-89              |   |    |    |    |            |   |    |    |    |           |  |  |  |  |
| ORGANIZATION                                                                       |  |  | Hunter / ESE         |   |    |    |    |            |   |    |    |    |           |  |  |  |  |
| CERTIFIED BY                                                                       |  |  | Eastern Tech. Assoc. |   |    |    |    |            |   |    |    |    |           |  |  |  |  |
| DATE                                                                               |  |  | 9-8-88               |   |    |    |    |            |   |    |    |    |           |  |  |  |  |
| VERIFIED BY                                                                        |  |  |                      |   |    |    |    |            |   |    |    |    |           |  |  |  |  |
| DATE                                                                               |  |  |                      |   |    |    |    |            |   |    |    |    |           |  |  |  |  |
| COMMENTS                                                                           |  |  | NO SUN               |   |    |    |    |            |   |    |    |    |           |  |  |  |  |
| 15 MINUTE V.E.                                                                     |  |  |                      |   |    |    |    |            |   |    |    |    |           |  |  |  |  |
| HAVE RECEIVED A COPY OF THESE OPACITY OBSERVATIONS                                 |  |  |                      |   |    |    |    |            |   |    |    |    |           |  |  |  |  |
| SIGNATURE                                                                          |  |  |                      |   |    |    |    |            |   |    |    |    |           |  |  |  |  |
| TITLE                                                                              |  |  |                      |   |    |    |    |            |   |    |    |    |           |  |  |  |  |
| DATE                                                                               |  |  |                      |   |    |    |    |            |   |    |    |    |           |  |  |  |  |

|                                                                                                             |  |                                                                                                                                   |  |                                                     |  |                                                  |  |
|-------------------------------------------------------------------------------------------------------------|--|-----------------------------------------------------------------------------------------------------------------------------------|--|-----------------------------------------------------|--|--------------------------------------------------|--|
| SOURCE NAME<br><b>ST. Johns River Coal Terminal</b>                                                         |  | OBSERVATION DATE<br><b>2-22-89</b>                                                                                                |  | START TIME<br><b>12:10</b>                          |  | STOP TIME<br><b>12:25</b>                        |  |
| ADDRESS<br><b>6020 William Mills St.</b>                                                                    |  | SEC<br>MIN 0 15 30 45                                                                                                             |  | SEC<br>MIN 0 15 30 45                               |  |                                                  |  |
| CITY<br><b>Jacksonville</b>                                                                                 |  | STATE<br><b>Florida</b>                                                                                                           |  | ZIP<br><b>32226</b>                                 |  |                                                  |  |
| PHONE<br><b>904-751-7729</b>                                                                                |  | SOURCE ID NUMBER<br><b>#4 Transfer Station</b>                                                                                    |  |                                                     |  |                                                  |  |
| PROCESS EQUIPMENT<br><b>Coal Conveyor Transfer Station</b>                                                  |  | OPERATING MODE<br><b>#2 Normal</b>                                                                                                |  |                                                     |  |                                                  |  |
| CONTROL EQUIPMENT<br><b>Wet Suppression</b>                                                                 |  | OPERATING MODE<br><b>Normal</b>                                                                                                   |  |                                                     |  |                                                  |  |
| DESCRIBE EMISSION POINT<br><b>START Conveyor Transfer Station STOP ✓</b>                                    |  |                                                                                                                                   |  |                                                     |  |                                                  |  |
| HEIGHT ABOVE GROUND LEVEL<br><b>START 30' STOP ✓</b>                                                        |  | HEIGHT RELATIVE TO OBSERVER<br><b>START 30' STOP ✓</b>                                                                            |  |                                                     |  |                                                  |  |
| DISTANCE FROM OBSERVER<br><b>START 120' STOP ✓</b>                                                          |  | DIRECTION FROM OBSERVER<br><b>START NNE STOP ✓</b>                                                                                |  |                                                     |  |                                                  |  |
| DESCRIBE EMISSIONS<br><b>START None STOP ✓</b>                                                              |  |                                                                                                                                   |  |                                                     |  |                                                  |  |
| EMISSION COLOR<br><b>START None STOP ✓</b>                                                                  |  | PLUME TYPE CONTINUOUS <input type="checkbox"/> FUGITIVE <input checked="" type="checkbox"/> INTERMITTENT <input type="checkbox"/> |  |                                                     |  |                                                  |  |
| WATER DROPLETS PRESENT:<br><b>NO <input checked="" type="checkbox"/> YES <input type="checkbox"/></b>       |  | WATER DROPLET PLUME<br><b>ATTACHED <input type="checkbox"/> DETACHED <input type="checkbox"/></b>                                 |  |                                                     |  |                                                  |  |
| POINT IN THE PLUME AT WHICH OPACITY WAS DETERMINED<br><b>START Outside of Bushes STOP</b>                   |  |                                                                                                                                   |  |                                                     |  |                                                  |  |
| DESCRIBE BACKGROUND<br><b>START Sky Superstreaks STOP ✓</b>                                                 |  |                                                                                                                                   |  |                                                     |  |                                                  |  |
| BACKGROUND COLOR<br><b>START Grey STOP ✓</b>                                                                |  | SKY CONDITIONS<br><b>START Overcast STOP ✓</b>                                                                                    |  |                                                     |  |                                                  |  |
| WIND SPEED <b>4-6</b> STOP ✓                                                                                |  | WIND DIRECTION<br><b>START NWN STOP ✓</b>                                                                                         |  |                                                     |  |                                                  |  |
| AMBIENT TEMP.<br><b>START 61 STOP</b>                                                                       |  | WET BULB TEMP.<br><b>58</b>                                                                                                       |  | RH. percent<br><b>84</b>                            |  |                                                  |  |
| Source Layout Sketch<br> |  |                                                                                                                                   |  |                                                     |  |                                                  |  |
| COMMENTS<br><b>No Sun</b>                                                                                   |  |                                                                                                                                   |  |                                                     |  |                                                  |  |
| <b>15 minute V.E.</b>                                                                                       |  |                                                                                                                                   |  |                                                     |  |                                                  |  |
| HAVE RECEIVED A COPY OF THESE OPACITY OBSERVATIONS                                                          |  |                                                                                                                                   |  |                                                     |  |                                                  |  |
| SIGNATURE<br><b>TITLE</b>                                                                                   |  | DATE                                                                                                                              |  | OBSERVER'S NAME (PRINT)<br><b>Pamela J. McElroy</b> |  | OBSERVER'S SIGNATURE<br><b>Pamela J. McElroy</b> |  |
|                                                                                                             |  |                                                                                                                                   |  |                                                     |  | DATE<br><b>2-22-89</b>                           |  |
|                                                                                                             |  |                                                                                                                                   |  | ORGANIZATION<br><b>HUNTER/ES&amp;E</b>              |  |                                                  |  |
|                                                                                                             |  | CERTIFIED BY<br><b>Eastern Tech. Assoc.</b>                                                                                       |  | DATE<br><b>9-8-89</b>                               |  |                                                  |  |
|                                                                                                             |  | VERIFIED BY                                                                                                                       |  | DATE                                                |  |                                                  |  |

| SOURCE NAME<br>ST. Johns River Coal Terminal                                                                                                                                                                                                                        |  |  | OBSERVATION DATE<br>2-22-89                                                                                                          |   |   |   | START TIME<br>12:40 / 13:00                                                                           |    |   |   | STOP TIME<br>12:55 / 13:15                                                               |   |  |  |
|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--|--|--------------------------------------------------------------------------------------------------------------------------------------|---|---|---|-------------------------------------------------------------------------------------------------------|----|---|---|------------------------------------------------------------------------------------------|---|--|--|
| ADDRESS<br>6020 William Mills ST.                                                                                                                                                                                                                                   |  |  | CITY<br>Jacksonville                                                                                                                 |   |   |   | STATE<br>Florida                                                                                      |    |   |   | ZIP<br>32206                                                                             |   |  |  |
| PHONE<br>904-751-7729                                                                                                                                                                                                                                               |  |  | SOURCE ID NUMBER<br>#5                                                                                                               |   |   |   | PROCESS EQUIPMENT<br>CT-3 Coal Conveyor                                                               |    |   |   | OPERATING MODE<br>Normal                                                                 |   |  |  |
| CONTROL EQUIPMENT<br>Enclosed / Upstream Suppressor                                                                                                                                                                                                                 |  |  | OPERATING MODE<br>Normal                                                                                                             |   |   |   | DESCRIBE EMISSION POINT<br>START OUTSIDE COAL CONVEYOR STOP ✓                                         |    |   |   | HEIGHT ABOVE GROUND LEVEL<br>START 8' STOP ✓                                             |   |  |  |
| DISTANCE FROM OBSERVER<br>START 4' UNDER STOP ✓                                                                                                                                                                                                                     |  |  | DIRECTION FROM OBSERVER<br>START WNW STOP ✓                                                                                          |   |   |   | DESCRIBE EMISSIONS<br>START None STOP ✓                                                               |    |   |   | EMISSION COLOR<br>START None STOP ✓                                                      |   |  |  |
| WATER DROPLETS PRESENT:<br>NO <input checked="" type="checkbox"/> YES <input type="checkbox"/>                                                                                                                                                                      |  |  | PLUME TYPE CONTINUOUS <input type="checkbox"/><br>FUGITIVE <input checked="" type="checkbox"/> INTERMITTENT <input type="checkbox"/> |   |   |   | WATER DROPLET PLUME<br>ATTACHED <input type="checkbox"/> DETACHED <input checked="" type="checkbox"/> |    |   |   | POINT IN THE PLUME AT WHICH OPACITY WAS DETERMINED<br>START OUTSIDE COAL CONVEYOR STOP ✓ |   |  |  |
| DESCRIBE BACKGROUND<br>START Grey / Sky STOP ✓                                                                                                                                                                                                                      |  |  | BACKGROUND COLOR<br>START Grey STOP ✓                                                                                                |   |   |   | WIND SPEED<br>START 6-8 mph STOP ✓                                                                    |    |   |   | WIND DIRECTION<br>START NWN STOP ✓                                                       |   |  |  |
| AMBIENT TEMP.<br>START 61 STOP ✓                                                                                                                                                                                                                                    |  |  | WET BULB TEMP.<br>58                                                                                                                 |   |   |   | RH. per cent<br>84                                                                                    |    |   |   | AVERAGE OPACITY FOR HIGHEST PERIOD<br>0                                                  |   |  |  |
| <p>Source Layout Sketch</p> <p>Drop Plume into the track</p> <p>Observer's Position</p> <p>Platform 4' Above Conveyor</p> <p>Water</p> <p>Dirt Rd.</p> <p>railroad track</p> <p>Sun</p> <p>Wet Bulb</p> <p>Plume</p> <p>Emission Point</p> <p>Sun Location Line</p> |  |  | 1                                                                                                                                    | 0 | 0 | 0 | 0                                                                                                     | 31 | 0 | 0 | 0                                                                                        | 0 |  |  |
|                                                                                                                                                                                                                                                                     |  |  | 2                                                                                                                                    | 0 | 0 | 0 | 0                                                                                                     | 32 | 0 | 0 | 0                                                                                        | 0 |  |  |
|                                                                                                                                                                                                                                                                     |  |  | 3                                                                                                                                    | 0 | 0 | 0 | 0                                                                                                     | 33 |   |   |                                                                                          |   |  |  |
|                                                                                                                                                                                                                                                                     |  |  | 4                                                                                                                                    | 0 | 0 | 0 | 0                                                                                                     | 34 |   |   |                                                                                          |   |  |  |
|                                                                                                                                                                                                                                                                     |  |  | 5                                                                                                                                    | 0 | 0 | 0 | 0                                                                                                     | 35 |   |   |                                                                                          |   |  |  |
|                                                                                                                                                                                                                                                                     |  |  | 6                                                                                                                                    | 0 | 0 | 0 | 0                                                                                                     | 36 |   |   |                                                                                          |   |  |  |
|                                                                                                                                                                                                                                                                     |  |  | 7                                                                                                                                    | 0 | 0 | 0 | 0                                                                                                     | 37 |   |   |                                                                                          |   |  |  |
|                                                                                                                                                                                                                                                                     |  |  | 8                                                                                                                                    | 0 | 0 | 0 | 0                                                                                                     | 38 |   |   |                                                                                          |   |  |  |
|                                                                                                                                                                                                                                                                     |  |  | 9                                                                                                                                    | 0 | 0 | 0 | 0                                                                                                     | 39 |   |   |                                                                                          |   |  |  |
|                                                                                                                                                                                                                                                                     |  |  | 10                                                                                                                                   | 0 | 0 | 0 | 0                                                                                                     | 40 |   |   |                                                                                          |   |  |  |
|                                                                                                                                                                                                                                                                     |  |  | 11                                                                                                                                   | 0 | 0 | 0 | 0                                                                                                     | 41 |   |   |                                                                                          |   |  |  |
|                                                                                                                                                                                                                                                                     |  |  | 12                                                                                                                                   | 0 | 0 | 0 | 0                                                                                                     | 42 |   |   |                                                                                          |   |  |  |
|                                                                                                                                                                                                                                                                     |  |  | 13                                                                                                                                   | 0 | 0 | 0 | 0                                                                                                     | 43 |   |   |                                                                                          |   |  |  |
|                                                                                                                                                                                                                                                                     |  |  | 14                                                                                                                                   | 0 | 0 | 0 | 0                                                                                                     | 44 |   |   |                                                                                          |   |  |  |
|                                                                                                                                                                                                                                                                     |  |  | 15                                                                                                                                   | 0 | 0 | 0 | 0                                                                                                     | 45 |   |   |                                                                                          |   |  |  |
|                                                                                                                                                                                                                                                                     |  |  | 16                                                                                                                                   | 0 | 0 | 0 | 0                                                                                                     | 46 |   |   |                                                                                          |   |  |  |
|                                                                                                                                                                                                                                                                     |  |  | 17                                                                                                                                   | 0 | 0 | 0 | 0                                                                                                     | 47 |   |   |                                                                                          |   |  |  |
|                                                                                                                                                                                                                                                                     |  |  | 18                                                                                                                                   | 0 | 0 | 0 | 0                                                                                                     | 48 |   |   |                                                                                          |   |  |  |
|                                                                                                                                                                                                                                                                     |  |  | 19                                                                                                                                   | 0 | 0 | 0 | 0                                                                                                     | 49 |   |   |                                                                                          |   |  |  |
|                                                                                                                                                                                                                                                                     |  |  | 20                                                                                                                                   | 0 | 0 | 0 | 0                                                                                                     | 50 |   |   |                                                                                          |   |  |  |
|                                                                                                                                                                                                                                                                     |  |  | 21                                                                                                                                   | 0 | 0 | 0 | 0                                                                                                     | 51 |   |   |                                                                                          |   |  |  |
|                                                                                                                                                                                                                                                                     |  |  | 22                                                                                                                                   | 0 | 0 | 0 | 0                                                                                                     | 52 |   |   |                                                                                          |   |  |  |
|                                                                                                                                                                                                                                                                     |  |  | 23                                                                                                                                   | 0 | 0 | 0 | 0                                                                                                     | 53 |   |   |                                                                                          |   |  |  |
|                                                                                                                                                                                                                                                                     |  |  | 24                                                                                                                                   | 0 | 0 | 0 | 0                                                                                                     | 54 |   |   |                                                                                          |   |  |  |
|                                                                                                                                                                                                                                                                     |  |  | 25                                                                                                                                   | 0 | 0 | 0 | 0                                                                                                     | 55 |   |   |                                                                                          |   |  |  |
|                                                                                                                                                                                                                                                                     |  |  | 26                                                                                                                                   | 0 | 0 | 0 | 0                                                                                                     | 56 |   |   |                                                                                          |   |  |  |
|                                                                                                                                                                                                                                                                     |  |  | 27                                                                                                                                   | 0 | 0 | 0 | 0                                                                                                     | 57 |   |   |                                                                                          |   |  |  |
|                                                                                                                                                                                                                                                                     |  |  | 28                                                                                                                                   | 0 | 0 | 0 | 0                                                                                                     | 58 |   |   |                                                                                          |   |  |  |
|                                                                                                                                                                                                                                                                     |  |  | 29                                                                                                                                   | 0 | 0 | 0 | 0                                                                                                     | 59 |   |   |                                                                                          |   |  |  |
|                                                                                                                                                                                                                                                                     |  |  | 30                                                                                                                                   | 0 | 0 | 0 | 0                                                                                                     | 60 |   |   |                                                                                          |   |  |  |
| COMMENTS<br>NO SUN                                                                                                                                                                                                                                                  |  |  | OBSERVER'S NAME (PRINT)<br>Pamela J. McElroy                                                                                         |   |   |   | OBSERVER'S SIGNATURE<br>Pamela J. McElroy                                                             |    |   |   | DATE<br>2-22-89                                                                          |   |  |  |
| 2 - 15 MINUTE V.E.'S                                                                                                                                                                                                                                                |  |  | ORGANIZATION<br>HUNTER ESE                                                                                                           |   |   |   | CERTIFIED BY<br>Eastern Assoc.                                                                        |    |   |   | DATE<br>September 8, 1988                                                                |   |  |  |
| I HAVE RECEIVED A COPY OF THESE OPACITY OBSERVATIONS                                                                                                                                                                                                                |  |  | VERIFIED BY                                                                                                                          |   |   |   | DATE                                                                                                  |    |   |   | DATE                                                                                     |   |  |  |
| SIGNATURE                                                                                                                                                                                                                                                           |  |  | DATE                                                                                                                                 |   |   |   | DATE                                                                                                  |    |   |   | DATE                                                                                     |   |  |  |
| TITLE                                                                                                                                                                                                                                                               |  |  | DATE                                                                                                                                 |   |   |   | DATE                                                                                                  |    |   |   | DATE                                                                                     |   |  |  |



|                                                                                                                                                          |  |  |                                                                                                                                       |    |                    |    |                   |    |    |    |
|----------------------------------------------------------------------------------------------------------------------------------------------------------|--|--|---------------------------------------------------------------------------------------------------------------------------------------|----|--------------------|----|-------------------|----|----|----|
| SOURCE NAME<br>ST. JOHNS RIVER COAL TERMINAL                                                                                                             |  |  | OBSERVATION DATE<br>2/22/89                                                                                                           |    | START TIME<br>1320 |    | STOP TIME<br>1335 |    |    |    |
| ADDRESS<br>6020 WILLIAM MILLS ST.                                                                                                                        |  |  | SEC<br>MIN                                                                                                                            |    | SEC<br>MIN         |    |                   |    |    |    |
|                                                                                                                                                          |  |  | 0                                                                                                                                     | 15 | 30                 | 45 | 0                 | 15 | 30 | 45 |
| CITY<br>JACKSONVILLE                                                                                                                                     |  |  | STATE<br>FL                                                                                                                           |    | ZIP<br>32226       |    |                   |    |    |    |
| PHONE<br>904-751-7729                                                                                                                                    |  |  | SOURCE ID NUMBER<br>TRANSFER STN #3                                                                                                   |    |                    |    |                   |    |    |    |
| PROCESS EQUIPMENT<br>WATER ENCLOSURE<br>TRANSFER STATION                                                                                                 |  |  | OPERATING MODE<br>NORMAL                                                                                                              |    |                    |    |                   |    |    |    |
| CONTROL EQUIPMENT WET<br>SUPPRESSION/ENCLOSURE                                                                                                           |  |  | OPERATING MODE<br>NORMAL                                                                                                              |    |                    |    |                   |    |    |    |
| DESCRIBE EMISSION POINT<br>START STOP                                                                                                                    |  |  |                                                                                                                                       |    |                    |    |                   |    |    |    |
| HEIGHT ABOVE GROUND LEVEL<br>START 50' STOP                                                                                                              |  |  | HEIGHT RELATIVE TO OBSERVER<br>START 20' STOP ✓                                                                                       |    |                    |    |                   |    |    |    |
| DISTANCE FROM OBSERVER<br>START 50' STOP ✓                                                                                                               |  |  | DIRECTION FROM OBSERVER<br>START N STOP ✓                                                                                             |    |                    |    |                   |    |    |    |
| DESCRIBE EMISSIONS<br>START NONE STOP                                                                                                                    |  |  |                                                                                                                                       |    |                    |    |                   |    |    |    |
| EMISSION COLOR<br>START STOP                                                                                                                             |  |  | PLUME TYPE: CONTINUOUS <input type="checkbox"/><br>FUGITIVE <input checked="" type="checkbox"/> INTERMITTENT <input type="checkbox"/> |    |                    |    |                   |    |    |    |
| WATER DROPLETS PRESENT:<br>NO <input checked="" type="checkbox"/> YES <input type="checkbox"/>                                                           |  |  | IF WATER DROPLET PLUME:<br>ATTACHED <input type="checkbox"/> DETACHED <input type="checkbox"/>                                        |    |                    |    |                   |    |    |    |
| POINT IN THE PLUME AT WHICH OPACITY WAS DETERMINED<br>START 1' ABOVE<br>TRANSFER STATION                                                                 |  |  |                                                                                                                                       |    |                    |    |                   |    |    |    |
| DESCRIBE BACKGROUND<br>START SKY STOP ✓                                                                                                                  |  |  |                                                                                                                                       |    |                    |    |                   |    |    |    |
| BACKGROUND COLOR<br>START WHITE STOP ✓                                                                                                                   |  |  | SKY CONDITIONS<br>START OVERCAST STOP ✓                                                                                               |    |                    |    |                   |    |    |    |
| WIND SPEED<br>START 15 mph STOP ✓                                                                                                                        |  |  | WIND DIRECTION<br>START N STOP ✓                                                                                                      |    |                    |    |                   |    |    |    |
| AMBIENT TEMP.<br>START 64°F STOP ✓                                                                                                                       |  |  | WET BULB TEMP.<br>60°F                                                                                                                |    | RH. percent<br>84% |    |                   |    |    |    |
| <p>Source Layout Sketch</p> <p>Draw North Arrow</p> <p>Emission Point</p> <p>Observers Position</p> <p>Sun Location Line</p> <p>Wind Plume and Stack</p> |  |  | 24                                                                                                                                    |    |                    |    |                   |    |    |    |
|                                                                                                                                                          |  |  | 25                                                                                                                                    |    |                    |    |                   |    |    |    |
|                                                                                                                                                          |  |  | 26                                                                                                                                    |    |                    |    |                   |    |    |    |
|                                                                                                                                                          |  |  | 27                                                                                                                                    |    |                    |    |                   |    |    |    |
|                                                                                                                                                          |  |  | 28                                                                                                                                    |    |                    |    |                   |    |    |    |
|                                                                                                                                                          |  |  | 29                                                                                                                                    |    |                    |    |                   |    |    |    |
|                                                                                                                                                          |  |  | 30                                                                                                                                    |    |                    |    |                   |    |    |    |
|                                                                                                                                                          |  |  | 31                                                                                                                                    |    |                    |    |                   |    |    |    |
|                                                                                                                                                          |  |  | 32                                                                                                                                    |    |                    |    |                   |    |    |    |
|                                                                                                                                                          |  |  | 33                                                                                                                                    |    |                    |    |                   |    |    |    |
| AVERAGE OPACITY FOR HIGHEST PERIOD 090                                                                                                                   |  |  | NUMBER OF READINGS ABOVE 0% WERE 0                                                                                                    |    |                    |    |                   |    |    |    |
| RANGE OF OPACITY READINGS<br>MINIMUM 0 MAXIMUM 0                                                                                                         |  |  |                                                                                                                                       |    |                    |    |                   |    |    |    |
| OBSERVER'S NAME (PRINT)<br>THELMA A. BARNARD                                                                                                             |  |  |                                                                                                                                       |    |                    |    |                   |    |    |    |
| OBSERVER'S SIGNATURE<br>Thelma A. Barnard                                                                                                                |  |  | DATE<br>2/22/89                                                                                                                       |    |                    |    |                   |    |    |    |
| ORGANIZATION<br>HUNTER/ESE                                                                                                                               |  |  |                                                                                                                                       |    |                    |    |                   |    |    |    |
| CERTIFIED BY<br>EASTERN TECH. ASSOC.                                                                                                                     |  |  | DATE<br>11/30/88                                                                                                                      |    |                    |    |                   |    |    |    |
| VERIFIED BY                                                                                                                                              |  |  | DATE                                                                                                                                  |    |                    |    |                   |    |    |    |
| COMMENTS<br>FROM THE SIDE OF<br>TRANSFER STATION                                                                                                         |  |  |                                                                                                                                       |    |                    |    |                   |    |    |    |
| I HAVE RECEIVED A COPY OF THESE OPACITY OBSERVATIONS                                                                                                     |  |  |                                                                                                                                       |    |                    |    |                   |    |    |    |
| SIGNATURE                                                                                                                                                |  |  |                                                                                                                                       |    |                    |    |                   |    |    |    |
| TITLE                                                                                                                                                    |  |  | DATE                                                                                                                                  |    |                    |    |                   |    |    |    |



|                                                                                                     |  |  |                                                                                                                                       |  |  |  |                                        |  |  |  |                   |  |  |  |
|-----------------------------------------------------------------------------------------------------|--|--|---------------------------------------------------------------------------------------------------------------------------------------|--|--|--|----------------------------------------|--|--|--|-------------------|--|--|--|
| SOURCE NAME<br>ST. JOHNS RIVER COAL TERMINAL                                                        |  |  | OBSERVATION DATE<br>2/22/89                                                                                                           |  |  |  | START TIME<br>1335                     |  |  |  | STOP TIME<br>1350 |  |  |  |
| ADDRESS<br>6020 WILLIAM HILLS ST.                                                                   |  |  | SEC<br>MIN                                                                                                                            |  |  |  | SEC<br>MIN                             |  |  |  | SEC<br>MIN        |  |  |  |
|                                                                                                     |  |  | 0 15 30 45                                                                                                                            |  |  |  | 0 15 30 45                             |  |  |  | 0 15 30 45        |  |  |  |
| CITY<br>JACKSONVILLE                                                                                |  |  | STATE<br>FL                                                                                                                           |  |  |  | ZIP<br>32226                           |  |  |  |                   |  |  |  |
| PHONE<br>904-751-7729                                                                               |  |  | SOURCE ID NUMBER<br>TRANSFER STN #3                                                                                                   |  |  |  |                                        |  |  |  |                   |  |  |  |
| PROCESS EQUIPMENT<br>WATER TREATMENT STATION                                                        |  |  | OPERATING MODE<br>NORMAL                                                                                                              |  |  |  |                                        |  |  |  |                   |  |  |  |
| CONTROL EQUIPMENT WCT<br>SUPPRESSION/ENCLOSURE                                                      |  |  | OPERATING MODE<br>NORMAL                                                                                                              |  |  |  |                                        |  |  |  |                   |  |  |  |
| DESCRIBE EMISSION POINT<br>START STOP                                                               |  |  |                                                                                                                                       |  |  |  |                                        |  |  |  |                   |  |  |  |
| HEIGHT ABOVE GROUND LEVEL<br>START 50' STOP ✓                                                       |  |  | HEIGHT RELATIVE TO OBSERVER<br>START 50' STOP ✓                                                                                       |  |  |  |                                        |  |  |  |                   |  |  |  |
| DISTANCE FROM OBSERVER<br>START 75' STOP ✓                                                          |  |  | DIRECTION FROM OBSERVER<br>START SE STOP ✓                                                                                            |  |  |  |                                        |  |  |  |                   |  |  |  |
| DESCRIBE EMISSIONS<br>START NONE STOP                                                               |  |  |                                                                                                                                       |  |  |  |                                        |  |  |  |                   |  |  |  |
| EMISSION COLOR<br>START STOP                                                                        |  |  | PLUME TYPE: CONTINUOUS <input type="checkbox"/><br>FUGITIVE <input checked="" type="checkbox"/> INTERMITTENT <input type="checkbox"/> |  |  |  |                                        |  |  |  |                   |  |  |  |
| WATER DROPLETS PRESENT:<br>NOTE YES <input type="checkbox"/> NO <input checked="" type="checkbox"/> |  |  | IF WATER DROPLET PLUME<br>ATTACHED <input type="checkbox"/> DETACHED <input type="checkbox"/>                                         |  |  |  |                                        |  |  |  |                   |  |  |  |
| POINT IN THE PLUME AT WHICH OPACITY WAS DETERMINED<br>START 1' ABOVE TRANSFER STATION               |  |  |                                                                                                                                       |  |  |  |                                        |  |  |  |                   |  |  |  |
| DESCRIBE BACKGROUND<br>START SKY STOP ✓                                                             |  |  |                                                                                                                                       |  |  |  |                                        |  |  |  |                   |  |  |  |
| BACKGROUND COLOR<br>START WHITE STOP ✓                                                              |  |  | SKY CONDITIONS<br>START OVERCAST STOP ✓                                                                                               |  |  |  |                                        |  |  |  |                   |  |  |  |
| WIND SPEED<br>START 15 mph STOP ✓                                                                   |  |  | WIND DIRECTION<br>START N STOP ✓                                                                                                      |  |  |  |                                        |  |  |  |                   |  |  |  |
| AMBIENT TEMP<br>START 64°F STOP ✓                                                                   |  |  | WET BULB TEMP.<br>60°F                                                                                                                |  |  |  | RH, percent<br>84%                     |  |  |  |                   |  |  |  |
|                                                                                                     |  |  |                                                                                                                                       |  |  |  |                                        |  |  |  |                   |  |  |  |
|                                                                                                     |  |  |                                                                                                                                       |  |  |  |                                        |  |  |  |                   |  |  |  |
|                                                                                                     |  |  |                                                                                                                                       |  |  |  |                                        |  |  |  |                   |  |  |  |
|                                                                                                     |  |  |                                                                                                                                       |  |  |  |                                        |  |  |  |                   |  |  |  |
|                                                                                                     |  |  |                                                                                                                                       |  |  |  |                                        |  |  |  |                   |  |  |  |
|                                                                                                     |  |  |                                                                                                                                       |  |  |  |                                        |  |  |  |                   |  |  |  |
|                                                                                                     |  |  |                                                                                                                                       |  |  |  |                                        |  |  |  |                   |  |  |  |
|                                                                                                     |  |  |                                                                                                                                       |  |  |  |                                        |  |  |  |                   |  |  |  |
|                                                                                                     |  |  |                                                                                                                                       |  |  |  |                                        |  |  |  |                   |  |  |  |
|                                                                                                     |  |  |                                                                                                                                       |  |  |  |                                        |  |  |  |                   |  |  |  |
| COMMENTS<br>FROM NW SIDE OF<br>TRANSFER STATION                                                     |  |  | AVERAGE OPACITY FOR<br>HIGHEST PERIOD 0.70                                                                                            |  |  |  | NUMBER OF READINGS ABOVE<br>0 % WERE 0 |  |  |  |                   |  |  |  |
|                                                                                                     |  |  | RANGE OF OPACITY READINGS<br>MINIMUM 0 MAXIMUM 0                                                                                      |  |  |  |                                        |  |  |  |                   |  |  |  |
|                                                                                                     |  |  | OBSERVER'S NAME (PRINT)<br>TERESA A. BARNARD                                                                                          |  |  |  |                                        |  |  |  |                   |  |  |  |
|                                                                                                     |  |  | OBSERVER'S SIGNATURE<br>Teresa A. Barnard                                                                                             |  |  |  | DATE<br>2/22/89                        |  |  |  |                   |  |  |  |
|                                                                                                     |  |  | ORGANIZATION<br>HUNTER / ESE                                                                                                          |  |  |  |                                        |  |  |  |                   |  |  |  |
| I HAVE RECEIVED A COPY OF THESE OPACITY OBSERVATIONS                                                |  |  | CERTIFIED BY<br>GARY T. ASSOC.                                                                                                        |  |  |  | DATE<br>11/30/88                       |  |  |  |                   |  |  |  |
| SIGNATURE                                                                                           |  |  | VERIFIED BY                                                                                                                           |  |  |  | DATE                                   |  |  |  |                   |  |  |  |
| TITLE                                                                                               |  |  | DATE                                                                                                                                  |  |  |  |                                        |  |  |  |                   |  |  |  |

| SOURCE NAME                                                                                                                       |  |  | OBSERVATION DATE                                                       |  |  |  | START TIME |  |  |  | STOP TIME |  |  |  |
|-----------------------------------------------------------------------------------------------------------------------------------|--|--|------------------------------------------------------------------------|--|--|--|------------|--|--|--|-----------|--|--|--|
| ST. JOHNS RIVER COAL TERMINAL                                                                                                     |  |  | 2/22/89                                                                |  |  |  | 1450       |  |  |  | 1626      |  |  |  |
| ADDRESS                                                                                                                           |  |  | SEC                                                                    |  |  |  | SEC        |  |  |  |           |  |  |  |
| 0020 WILLIAM MILLS ST.                                                                                                            |  |  | MIN                                                                    |  |  |  | MIN        |  |  |  |           |  |  |  |
|                                                                                                                                   |  |  | 0 15 30 45                                                             |  |  |  | 0 15 30 45 |  |  |  |           |  |  |  |
| CITY                                                                                                                              |  |  | 1                                                                      |  |  |  | 31         |  |  |  |           |  |  |  |
| JACKSONVILLE                                                                                                                      |  |  | 2                                                                      |  |  |  | 32         |  |  |  | 5         |  |  |  |
| STATE                                                                                                                             |  |  | 3                                                                      |  |  |  | 33         |  |  |  | 0         |  |  |  |
| FL                                                                                                                                |  |  | 4                                                                      |  |  |  | 34         |  |  |  | 5         |  |  |  |
| ZIP                                                                                                                               |  |  | 5                                                                      |  |  |  | 35         |  |  |  | 0         |  |  |  |
| 32226                                                                                                                             |  |  | 6                                                                      |  |  |  | 36         |  |  |  | 0         |  |  |  |
| PHONE                                                                                                                             |  |  | 7                                                                      |  |  |  | 37         |  |  |  | 0         |  |  |  |
| 904-751-7729                                                                                                                      |  |  | 8                                                                      |  |  |  | 38         |  |  |  | 5         |  |  |  |
| SOURCE ID NUMBER                                                                                                                  |  |  | 9                                                                      |  |  |  | 39         |  |  |  | 0         |  |  |  |
| STACKER                                                                                                                           |  |  | 10                                                                     |  |  |  | 40         |  |  |  |           |  |  |  |
| PROCESS EQUIPMENT                                                                                                                 |  |  | 11                                                                     |  |  |  | 41         |  |  |  | 5         |  |  |  |
| COAL STACKER                                                                                                                      |  |  | 12                                                                     |  |  |  | 42         |  |  |  | 0         |  |  |  |
| OPERATING MODE                                                                                                                    |  |  | 13                                                                     |  |  |  | 43         |  |  |  | 0         |  |  |  |
| NORMAL                                                                                                                            |  |  | 14                                                                     |  |  |  | 44         |  |  |  | 5         |  |  |  |
| CONTROL EQUIPMENT                                                                                                                 |  |  | 15                                                                     |  |  |  | 45         |  |  |  | 0         |  |  |  |
| WET SUPPRESSION                                                                                                                   |  |  | 16                                                                     |  |  |  | 46         |  |  |  | 0         |  |  |  |
| OPERATING MODE                                                                                                                    |  |  | 17                                                                     |  |  |  | 47         |  |  |  | 0         |  |  |  |
| NORMAL                                                                                                                            |  |  | 18                                                                     |  |  |  | 48         |  |  |  | 0         |  |  |  |
| DESCRIBE EMISSION POINT                                                                                                           |  |  | 19                                                                     |  |  |  | 49         |  |  |  | 0         |  |  |  |
| END OF                                                                                                                            |  |  | 20                                                                     |  |  |  | 50         |  |  |  | 5         |  |  |  |
| START STACKER                                                                                                                     |  |  | 21                                                                     |  |  |  | 51         |  |  |  | 0         |  |  |  |
| STOP                                                                                                                              |  |  | 22                                                                     |  |  |  | 52         |  |  |  | 0         |  |  |  |
| HEIGHT ABOVE GROUND LEVEL                                                                                                         |  |  | 23                                                                     |  |  |  | 53         |  |  |  | 0         |  |  |  |
| START 30' STOP ✓                                                                                                                  |  |  | 24                                                                     |  |  |  | 54         |  |  |  | 0         |  |  |  |
| HEIGHT RELATIVE TO OBSERVER                                                                                                       |  |  | 25                                                                     |  |  |  | 55         |  |  |  | 0         |  |  |  |
| START 30' STOP ✓                                                                                                                  |  |  | 26                                                                     |  |  |  | 56         |  |  |  | 5         |  |  |  |
| DISTANCE FROM OBSERVER                                                                                                            |  |  | 27                                                                     |  |  |  | 57         |  |  |  | 5         |  |  |  |
| START 30' STOP ✓                                                                                                                  |  |  | 28                                                                     |  |  |  | 58         |  |  |  | 0         |  |  |  |
| DIRECTION FROM OBSERVER                                                                                                           |  |  | 29                                                                     |  |  |  | 59         |  |  |  | 0         |  |  |  |
| START N STOP                                                                                                                      |  |  | 30                                                                     |  |  |  | 60         |  |  |  | 0         |  |  |  |
| DESCRIBE EMISSIONS                                                                                                                |  |  | AVERAGE OPACITY FOR HIGHEST PERIOD 2.1%                                |  |  |  |            |  |  |  |           |  |  |  |
| START COAL DUST STOP ✓                                                                                                            |  |  | NUMBER OF READINGS ABOVE RANGE OF OPACITY READINGS MINIMUM 0 MAXIMUM 5 |  |  |  |            |  |  |  |           |  |  |  |
| EMISSION COLOR                                                                                                                    |  |  | OBSERVER'S NAME (PRINT) THERESA A. BARNARD                             |  |  |  |            |  |  |  |           |  |  |  |
| START BLACK STOP ✓                                                                                                                |  |  | OBSERVER'S SIGNATURE Theresa A. Barnard                                |  |  |  |            |  |  |  |           |  |  |  |
| PLUME TYPE CONTINUOUS <input type="checkbox"/> FUGITIVE <input checked="" type="checkbox"/> INTERMITTENT <input type="checkbox"/> |  |  | DATE 2/22/89                                                           |  |  |  |            |  |  |  |           |  |  |  |
| WATER DROPLETS PRESENT: NO <input checked="" type="checkbox"/> YES <input type="checkbox"/>                                       |  |  | ORGANIZATION HUNTER/ESG                                                |  |  |  |            |  |  |  |           |  |  |  |
| IF WATER DROPLET PLUME ATTACHED <input type="checkbox"/> DETACHED <input type="checkbox"/>                                        |  |  | CERTIFIED BY EASTERN TECH. ASSOC.                                      |  |  |  |            |  |  |  |           |  |  |  |
| POINT IN THE PLUME AT WHICH OPACITY WAS DETERMINED BETWEEN STACKER AND PILE START AS COAL IS STOPPED MING OUT                     |  |  | DATE 11/30/88                                                          |  |  |  |            |  |  |  |           |  |  |  |
| DESCRIBE BACKGROUND                                                                                                               |  |  | VERIFIED BY                                                            |  |  |  |            |  |  |  |           |  |  |  |
| START SKY STOP ✓                                                                                                                  |  |  | DATE                                                                   |  |  |  |            |  |  |  |           |  |  |  |
| BACKGROUND COLOR                                                                                                                  |  |  |                                                                        |  |  |  |            |  |  |  |           |  |  |  |
| START WHITE STOP ✓                                                                                                                |  |  |                                                                        |  |  |  |            |  |  |  |           |  |  |  |
| SKY CONDITIONS                                                                                                                    |  |  |                                                                        |  |  |  |            |  |  |  |           |  |  |  |
| START OVERCAST STOP ✓                                                                                                             |  |  |                                                                        |  |  |  |            |  |  |  |           |  |  |  |
| WIND SPEED                                                                                                                        |  |  |                                                                        |  |  |  |            |  |  |  |           |  |  |  |
| START 15 mph STOP ✓                                                                                                               |  |  |                                                                        |  |  |  |            |  |  |  |           |  |  |  |
| WIND DIRECTION                                                                                                                    |  |  |                                                                        |  |  |  |            |  |  |  |           |  |  |  |
| START N NW STOP ✓                                                                                                                 |  |  |                                                                        |  |  |  |            |  |  |  |           |  |  |  |
| AMBIENT TEMP                                                                                                                      |  |  |                                                                        |  |  |  |            |  |  |  |           |  |  |  |
| START 64°F STOP ✓                                                                                                                 |  |  |                                                                        |  |  |  |            |  |  |  |           |  |  |  |
| WET BULB TEMP.                                                                                                                    |  |  |                                                                        |  |  |  |            |  |  |  |           |  |  |  |
| 60°F                                                                                                                              |  |  |                                                                        |  |  |  |            |  |  |  |           |  |  |  |
| RH. percent                                                                                                                       |  |  |                                                                        |  |  |  |            |  |  |  |           |  |  |  |
| 84%                                                                                                                               |  |  |                                                                        |  |  |  |            |  |  |  |           |  |  |  |

Source Layout Sketch Draw North Arrow

EPA

## VISIBLE EMISSION OBSERVATION FORM 1

Method 9 (Side One) 203A 203B Other:

 Company Name  
 ST. JOHNS RIVER POWER PARK  
 Facility Name  
 ST. JOHNS RIVER POWER PARK  
 Street Address  
 11201 NEW BERLIN ROAD  
 City  
 JACKSONVILLE State  
 FL Zip  
 32226

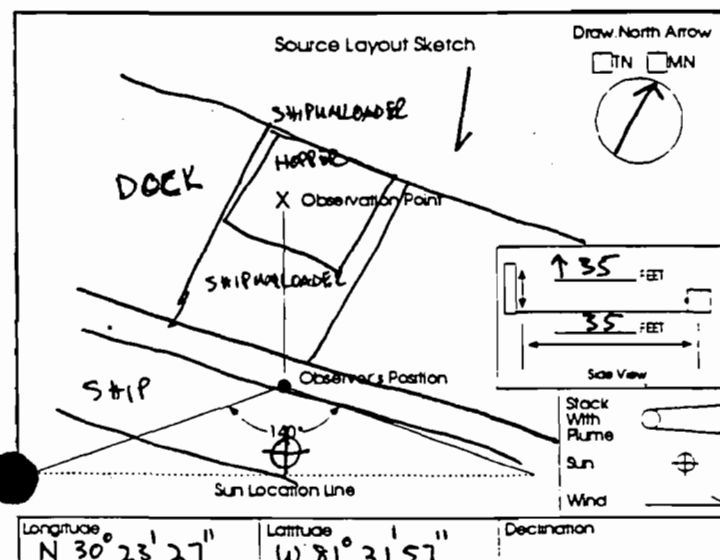
 Process  
 SHIP UNLOADING LIMESTONE Unit #  
 Operating Mode  
 5970 CAPACITY  
 Control Equipment  
 WET SUPPRESSION Operating Mode  
 090 CAPACITY

 Describe Emission Point  
 SHIP UNLOADER HOPPER

 Height of Emiss. Pt.  
 Start 80' End 80' Height of Emiss. Pt. Rel. to Observer  
 Start 35' End 35'  
 Distance to Emiss. Pt.  
 Start 35' End 35' Direction to Emiss. Pt. (Degrees)  
 Start 315° End 315°

 Vertical Angle to Obs. Pt.  
 Start 45° End 45° Direction to Obs. Pt. (Degrees)  
 Start 315° End 315°  
 Distance and Direction to Observation Point from Emission Point  
 Start 0-0 End 0-0

 Describe Emissions  
 Start NONE End NONE  
 Emission Color  
 Water Droplet Plume  
 Start NONE End NONE Attached ☐ Detached ☐ None ☒

 Describe Plume Background  
 Start OPEN SKY End OPEN SKY  
 Background Color  
 Sky Conditions  
 Start BLUE End BLUE Start SCATTERED End SCATTERED  
 Wind Speed  
 Wind Direction  
 Start 0-3 End 0-3 Start NAWW End NAWW  
 Ambient Temp.  
 Wet Bulb Temp.  
 Start 70°F End 70°F RH Percent

 Form Number 003-1 Page 1 of 2  
 Continued on VEO Form Number 003-2

| Observation Date |   | Time Zone |    | Start Time | End Time |
|------------------|---|-----------|----|------------|----------|
| 2/6/99           |   | EST       |    | 10:00      | 11:00    |
| Sec<br>Min       | 0 | 15        | 30 | 45         | Comments |
| 1                | 0 | 0         | 0  | 0          |          |
| 2                | 0 | 0         | 0  | 0          |          |
| 3                | 0 | 0         | 0  | 0          |          |
| 4                | 0 | 0         | 0  | 0          |          |
| 5                | 0 | 0         | 0  | 0          |          |
| 6                | 0 | 0         | 0  | 0          |          |
| 7                | 0 | 0         | 0  | 0          |          |
| 8                | 0 | 0         | 0  | 0          |          |
| 9                | 0 | 0         | 0  | 0          |          |
| 10               | 0 | 0         | 0  | 0          |          |
| 11               | 0 | 0         | 0  | 0          |          |
| 12               | 0 | 0         | 0  | 0          |          |
| 13               | 0 | 0         | 0  | 0          |          |
| 14               | 0 | 0         | 0  | 0          |          |
| 15               | 0 | 0         | 0  | 0          |          |
| 16               | 0 | 0         | 0  | 0          |          |
| 17               | 0 | 0         | 0  | 0          |          |
| 18               | 0 | 0         | 0  | 0          |          |
| 19               | 0 | 0         | 0  | 0          |          |
| 20               | 0 | 0         | 0  | 0          |          |
| 21               | 0 | 0         | 0  | 0          |          |
| 22               | 0 | 0         | 0  | 0          |          |
| 23               | 0 | 0         | 0  | 0          |          |
| 24               | 0 | 0         | 0  | 0          |          |
| 25               | 0 | 0         | 0  | 0          |          |
| 26               | 0 | 0         | 0  | 0          |          |
| 27               | 0 | 0         | 0  | 0          |          |
| 28               | 0 | 0         | 0  | 0          |          |
| 29               | 0 | 0         | 0  | 0          |          |
| 30               | 0 | 0         | 0  | 0          |          |

 Observer's Name (Print)  
 MARK K. LOECHELT  
 Observer's Signature  
 Mark K. Lochelt Date  
 2/6/99  
 Organization  
 ST. JOHNS RIVER POWER PARK  
 Certified By  
 EASTERN TECHNICAL ASSOCIATES Date  
 12/3/98

EPA

## VISIBLE EMISSION OBSERVATION FORM 1

Method used (Circle One)  
Method 9 203A 2038 Other: \_\_\_\_\_

Company Name  
ST. JOHNS RIVER POWER PARK

Facility Name  
ST. JOHNS RIVER POWER PARK

Street Address  
11201 NEW BERLIN ROAD

City State Zip  
JACKSONVILLE FL 32226

Process  
SHIPUNLOADING LIMESTONE

Unit # \_\_\_\_\_ Operating Mode \_\_\_\_\_

Control Equipment \_\_\_\_\_ Operating Mode \_\_\_\_\_

Describe Emission Point  
SHIPUNLOADER HOPPER

Height of Emiss. Pt. \_\_\_\_\_ Height of Emiss. Pt. Rel. to Observer \_\_\_\_\_

Start \_\_\_\_\_ End \_\_\_\_\_ Start \_\_\_\_\_ End \_\_\_\_\_

Distance to Emiss. Pt. \_\_\_\_\_ Direction to Emiss. Pt. (Degrees) \_\_\_\_\_

Start \_\_\_\_\_ End \_\_\_\_\_ Start \_\_\_\_\_ End \_\_\_\_\_

Vertical Angle to Obs. Pt. \_\_\_\_\_ Direction to Obs. Pt. (Degrees) \_\_\_\_\_

Start \_\_\_\_\_ End \_\_\_\_\_ Start \_\_\_\_\_ End \_\_\_\_\_

Distance and Direction to Observation Point from Emission Point \_\_\_\_\_

ft \_\_\_\_\_ End \_\_\_\_\_

Describe Emissions

Start \_\_\_\_\_ End \_\_\_\_\_

Emission Color \_\_\_\_\_ Water Droplet Plume \_\_\_\_\_

Start \_\_\_\_\_ End \_\_\_\_\_ Attached ☐ Detached ☐ None ☐

Describe Plume Background

Start \_\_\_\_\_ End \_\_\_\_\_

Background Color \_\_\_\_\_ Sky Conditions \_\_\_\_\_

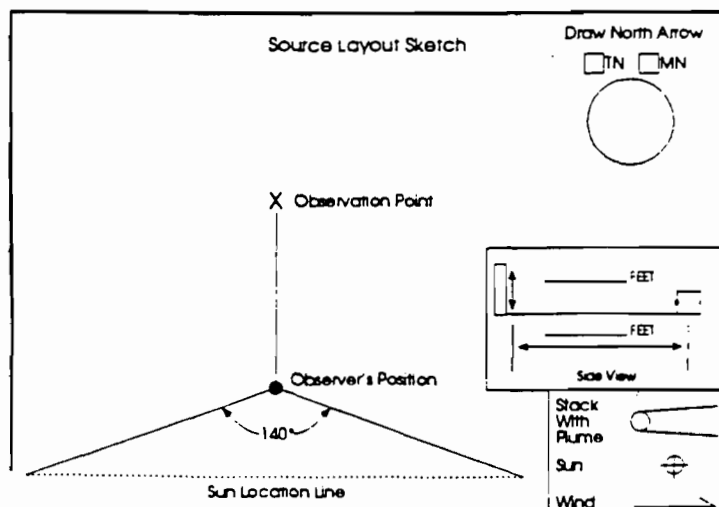
Start \_\_\_\_\_ End \_\_\_\_\_ Start \_\_\_\_\_ End \_\_\_\_\_

Wind Speed \_\_\_\_\_ Wind Direction \_\_\_\_\_

Start \_\_\_\_\_ End \_\_\_\_\_ Start \_\_\_\_\_ End \_\_\_\_\_

Ambient Temp. \_\_\_\_\_ Wet Bulb Temp. \_\_\_\_\_ RH Percent \_\_\_\_\_

Start \_\_\_\_\_ End \_\_\_\_\_



Longitude \_\_\_\_\_ Latitude \_\_\_\_\_ Declination \_\_\_\_\_

Additional Information

Form Number 003-2 Page 2 of 2

Continued on VEO Form Number 003-1

| Observation Date |   |    | Time Zone |    | Start Time | End Time |
|------------------|---|----|-----------|----|------------|----------|
| Sec<br>Min       | 0 | 15 | 30        | 45 | Comments   |          |
| 1                | 0 | 0  | 0         | 0  |            |          |
| 2                | 0 | 0  | 0         | 0  |            |          |
| 3                | 0 | 0  | 0         | 0  |            |          |
| 4                | 0 | 0  | 0         | 0  |            |          |
| 5                | 0 | 0  | 0         | 0  |            |          |
| 6                | 0 | 0  | 0         | 0  |            |          |
| 7                | 0 | 0  | 0         | 0  |            |          |
| 8                | 0 | 0  | 0         | 0  |            |          |
| 9                | 0 | 0  | 0         | 0  |            |          |
| 10               | 0 | 0  | 0         | 0  |            |          |
| 11               | 0 | 0  | 0         | 0  |            |          |
| 12               | 0 | 0  | 0         | 0  |            |          |
| 13               | 0 | 0  | 0         | 0  |            |          |
| 14               | 0 | 0  | 0         | 0  |            |          |
| 15               | 0 | 0  | 0         | 0  |            |          |
| 16               | 0 | 0  | 0         | 0  |            |          |
| 17               | 0 | 0  | 0         | 0  |            |          |
| 18               | 0 | 0  | 0         | 0  |            |          |
| 19               | 0 | 0  | 0         | 0  |            |          |
| 20               | 0 | 0  | 0         | 0  |            |          |
| 21               | 0 | 0  | 0         | 0  |            |          |
| 22               | 0 | 0  | 0         | 0  |            |          |
| 23               | 0 | 0  | 0         | 0  |            |          |
| 24               | 0 | 0  | 0         | 0  |            |          |
| 25               | 0 | 0  | 0         | 0  |            |          |
| 26               | 0 | 0  | 0         | 0  |            |          |
| 27               | 0 | 0  | 0         | 0  |            |          |
| 28               | 0 | 0  | 0         | 0  |            |          |
| 29               | 0 | 0  | 0         | 0  |            |          |
| 30               | 0 | 0  | 0         | 0  |            |          |

Observer's Name (Print)  
MARK K. LOECHET

Observer's Signature  
Mark K. Loechet

Organization  
ST. JOHNS RIVER POWER PARK

Confirmed By  
EASTERN TECHNICAL ASSOCIATES

Date  
2/6/99

Date  
12/3/98

EPA

## VISIBLE EMISSION OBSERVATION FORM 1

 Method (Circle One)  
 Method 9 203A 2038 Other:

 Company Name  
 ST. JOHNS RIVER POWER PARK  
 Facility Name  
 ST. JOHNS RIVER POWER PARK  
 Street Address  
 11201 NEW BERLIN ROAD  
 City  
 JACKSONVILLE State  
 FL Zip  
 32226

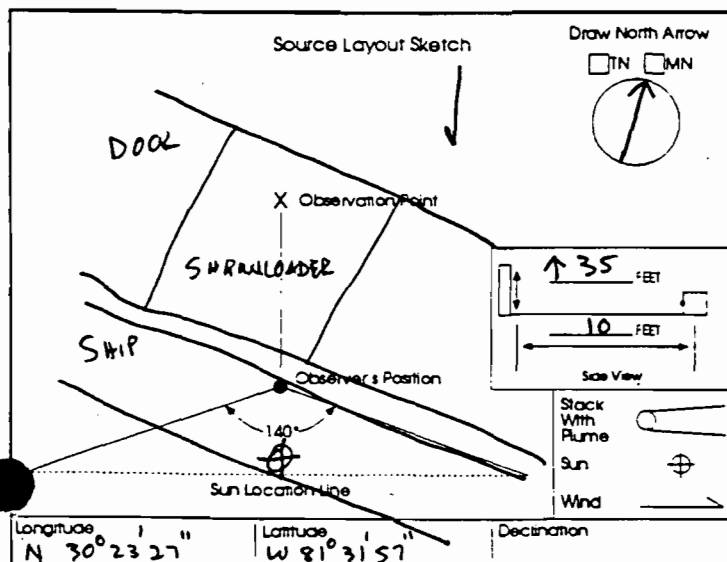
 Process  
 SHIP UNLOADING LIMESTONE Unit # Operating Mode  
 S920 CAPACITY  
 Control Equipment  
 WET SUPPRESSION Operating Mode  
 070 CAPACITY

 Describe Emission Point  
 TRANSFER POINT HOPPER TO CONVEYOR CT-1

 Height of Emiss. Pt.  
 Start 65' End 65' Height of Emiss. Pt. Rel. to Observer  
 Start 10' End 10'  
 Distance to Emiss. Pt.  
 Start 35' End 35' Direction to Emiss. Pt. (Degrees)  
 Start 315° End 315°

 Vertical Angle to Obs. Pt.  
 Start 15° End 15° Direction to Obs. Pt. (Degrees)  
 Start 315° End 315°  
 Distance and Direction to Observation Point from Emission Point  
 Start 0'-0" End 0'-0"

 Describe Emissions  
 Start NONE End NONE  
 Emission Color  
 Start NONE End NONE Water Droplet Plume  
 Attached ☐ Detached ☐ None ☒

 Describe Plume Background  
 Start LIMESTONE HOPPER End LIMESTONE HOPPER  
 Background Color  
 Start DARK BLUE End DARK BLUE Sky Conditions  
 Start SCATTERED End SCATTERED  
 Wind Speed  
 Start 0-3 End 0-3 Wind Direction  
 Start NNW End NNW  
 Ambient Temp.  
 Start 70°F End 70°F Wet Bulb Temp.  
 RH Percent


Additional Information

 Form Number 006-1 Page 1 of 2  
 Continued on VEO Form Number 006-2

| Observation Date |   | Time Zone |    |    | Start Time | End Time |
|------------------|---|-----------|----|----|------------|----------|
| 2/6/99           |   | EST       |    |    | 10:00      | 11:00    |
| Sec<br>Min       | 0 | 15        | 30 | 45 | Comments   |          |
| 1                | 0 | 0         | 0  | 0  |            |          |
| 2                | 0 | 0         | 0  | 0  |            |          |
| 3                | 0 | 0         | 0  | 0  |            |          |
| 4                | 0 | 0         | 0  | 0  |            |          |
| 5                | 0 | 0         | 0  | 0  |            |          |
| 6                | 0 | 0         | 0  | 0  |            |          |
| 7                | 0 | 0         | 0  | 0  |            |          |
| 8                | 0 | 0         | 0  | 0  |            |          |
| 9                | 0 | 0         | 0  | 0  |            |          |
| 10               | 0 | 0         | 0  | 0  |            |          |
| 11               | 0 | 0         | 0  | 0  |            |          |
| 12               | 0 | 0         | 0  | 0  |            |          |
| 13               | 0 | 0         | 0  | 0  |            |          |
| 14               | 0 | 0         | 0  | 0  |            |          |
| 15               | 0 | 0         | 0  | 0  |            |          |
| 16               | 0 | 0         | 0  | 0  |            |          |
| 17               | 0 | 0         | 0  | 0  |            |          |
| 18               | 0 | 0         | 0  | 0  |            |          |
| 19               | 0 | 0         | 0  | 0  |            |          |
| 20               | 0 | 0         | 0  | 0  |            |          |
| 21               | 0 | 0         | 0  | 0  |            |          |
| 22               | 0 | 0         | 0  | 0  |            |          |
| 23               | 0 | 0         | 0  | 0  |            |          |
| 24               | 0 | 0         | 0  | 0  |            |          |
| 25               | 0 | 0         | 0  | 0  |            |          |
| 26               | 0 | 0         | 0  | 0  |            |          |
| 27               | 0 | 0         | 0  | 0  |            |          |
| 28               | 0 | 0         | 0  | 0  |            |          |
| 29               | 0 | 0         | 0  | 0  |            |          |
| 30               | 0 | 0         | 0  | 0  |            |          |

 Observer's Name (Print)  
 MARY K. LOECHT  
 Observer's Signature  
 Mark K. Leucht Date  
 2/6/99  
 Organization  
 ST. JOHNS RIVER POWER PARK  
 Certified by  
 EASTERN TECHNICAL ASSOCIATES Date  
 12/3/98

EPA

## VISIBLE EMISSION OBSERVATION FORM 1

Method used (Circle One)  
(Method 9) 203A 203B Other: \_\_\_\_\_

Company Name  
ST. JOHNS RIVER POWER PARK

Facility Name  
ST. JOHNS RIVER POWER PARK

Street Address  
11201 NEW BERLIN ROAD

City  
JACKSONVILLE

State  
FL.

Zip  
32226

Process  
SHIP UNLOADING LIMESTONE

Unit # \_\_\_\_\_ Operating Mode \_\_\_\_\_

Control Equipment \_\_\_\_\_ Operating Mode \_\_\_\_\_

Describe Emission Point  
TRANSFER POINT HOPPER TO CONVEYOR CT-1

Height of Emiss. Pt.  
Start \_\_\_\_\_ End \_\_\_\_\_

Height of Emiss. Pt. Rel. to Observer  
Start \_\_\_\_\_ End \_\_\_\_\_

Distance to Emiss. Pt.  
Start \_\_\_\_\_ End \_\_\_\_\_

Direction to Emiss. Pt. (Degrees)  
Start \_\_\_\_\_ End \_\_\_\_\_

Vertical Angle to Obs. Pt.  
Start \_\_\_\_\_ End \_\_\_\_\_

Direction to Obs. Pt. (Degrees)  
Start \_\_\_\_\_ End \_\_\_\_\_

Distance and Direction to Observation Point from Emission Point  
Start \_\_\_\_\_ End \_\_\_\_\_

Describe Emissions

Start \_\_\_\_\_ End \_\_\_\_\_

Emission Color \_\_\_\_\_

Water Droplet Plume  
Start \_\_\_\_\_ End \_\_\_\_\_

Attached ☐ Detached ☐ None ☐

Describe Plume Background

Start \_\_\_\_\_ End \_\_\_\_\_

Background Color \_\_\_\_\_

Sky Conditions  
Start \_\_\_\_\_ End \_\_\_\_\_

Wind Speed  
Start \_\_\_\_\_ End \_\_\_\_\_

Wind Direction  
Start \_\_\_\_\_ End \_\_\_\_\_

Ambient Temp.  
Start \_\_\_\_\_ End \_\_\_\_\_

Wet Bulb Temp. \_\_\_\_\_ RH Percent \_\_\_\_\_

Source Layout Sketch

Draw North Arrow  
☐ TN ☐ MN

Observer's Position

Observation Point

140°

Sun Location Line

Scale View

Stack With Plume

Sun

Wind

Longitude \_\_\_\_\_ Latitude \_\_\_\_\_ Declination \_\_\_\_\_

Additional Information

\_\_\_\_\_

\_\_\_\_\_

Form Number 006-2 Page 2 of 2

Continued on VEO Form Number 006-1

| Observation Date | Time Zone | Start Time | End Time |    |
|------------------|-----------|------------|----------|----|
| Sec              | 0         | 15         | 30       | 45 |
| Min              |           |            |          |    |
| Comments         |           |            |          |    |
| 1                | 0         | 0          | 0        | 0  |
| 2                | 0         | 0          | 0        | 0  |
| 3                | 0         | 0          | 0        | 0  |
| 4                | 0         | 0          | 0        | 0  |
| 5                | 0         | 0          | 0        | 0  |
| 6                | 0         | 0          | 0        | 0  |
| 7                | 0         | 0          | 0        | 0  |
| 8                | 0         | 0          | 0        | 0  |
| 9                | 0         | 0          | 0        | 0  |
| 10               | 0         | 0          | 0        | 0  |
| 11               | 0         | 0          | 0        | 0  |
| 12               | 0         | 0          | 0        | 0  |
| 13               | 0         | 0          | 0        | 0  |
| 14               | 0         | 0          | 0        | 0  |
| 15               | 0         | 0          | 0        | 0  |
| 16               | 0         | 0          | 0        | 0  |
| 17               | 0         | 0          | 0        | 0  |
| 18               | 0         | 0          | 0        | 0  |
| 19               | 0         | 0          | 0        | 0  |
| 20               | 0         | 0          | 0        | 0  |
| 21               | 0         | 0          | 0        | 0  |
| 22               | 0         | 0          | 0        | 0  |
| 23               | 0         | 0          | 0        | 0  |
| 24               | 0         | 0          | 0        | 0  |
| 25               | 0         | 0          | 0        | 0  |
| 26               | 0         | 0          | 0        | 0  |
| 27               | 0         | 0          | 0        | 0  |
| 28               | 0         | 0          | 0        | 0  |
| 29               | 0         | 0          | 0        | 0  |
| 30               | 0         | 0          | 0        | 0  |

Observer's Name (Print)  
MARK K. LOEWELT

Observer's Signature  
Mark K. Loewelt

Organization  
ST. JOHNS RIVER POWER PARK

Eastern TECHNICAL ASSOCIATES

Date  
2/6/99

Date  
12/3/98

EPA

## VISIBLE EMISSION OBSERVATION FORM 1

Method Used (Circle One) Method 9 203A 203B Other: \_\_\_\_\_

Company Name  
ST. JOHNS RIVER POWER PARK

Facility Name  
ST. JOHNS RIVER POWER PARK

Street Address  
11201 NEW BERLIN ROAD

City  
JACKSONVILLE State  
FL Zip  
32226

Process  
SHIP UNLOADING LIMESTONE Unit # \_\_\_\_\_ Operating Mode  
5970 CAPACITY

Control Equipment  
SIDE SHIELDS Operating Mode  
090 CAPACITY

Describe Emission Point  
CONVEYOR CT-1

Height of Emiss. Pt.  
Start 50' End 50' Height of Emiss. Pt. Rel. to Observer  
Start -6' End -6'

Distance to Emiss. Pt.  
Start 30' End 30' Direction to Emiss. Pt. (Degrees)  
Start 0° End 0°

Vertical Angle to Obs. Pt.  
Start -15° End -15° Direction to Obs. Pt. (Degrees)  
Start 0° End 0°

Distance and Direction to Observation Point from Emission Point  
Start 0-0 End 0-0

Describe Emissions  
Start NONE End NONE

Emission Color  
Start NONE End NONE Water Droplet Plume  
Attached ☐ Detached ☐ None ☒

Describe Plume Background  
Start DOCK/WATER End DOCK/WATER

Background Color  
Start WHITE/BLUE End WHITE/BLUE Sky Conditions  
Start SCATTERED End SCATTERED

Wind Speed  
Start 0-3 End 0-3 Wind Direction  
Start NNW End NNW

Ambient Temp.  
Start 70°F End 70°F Wet Bulb Temp.  
Start \_\_\_\_\_ End \_\_\_\_\_ RH Percent  
Start \_\_\_\_\_ End \_\_\_\_\_

Source Layout Sketch

Draw North Arrow  
☐ TN ☐ MN

Observer's Position

Ship

Sun Location Line

Stack With Plume

Sun

Wind

Longitude  
N 30° 23' 27" Latitude  
W 81° 51' 56" Direction  
\_\_\_\_\_

Additional Information

Form Number 007-1 Page 1 of 2

Continued on VEO Form Number 007-2

| Observation Date |   |    | Time Zone |    | Start Time | End Time |
|------------------|---|----|-----------|----|------------|----------|
| 2/6/99           |   |    | EST       |    | 10:00      | 11:00    |
| Sec<br>Min       | 0 | 15 | 30        | 45 | Comments   |          |
| 1                | 0 | 0  | 0         | 0  |            |          |
| 2                | 0 | 0  | 0         | 0  |            |          |
| 3                | 0 | 0  | 0         | 0  |            |          |
| 4                | 0 | 0  | 0         | 0  |            |          |
| 5                | 0 | 0  | 0         | 0  |            |          |
| 6                | 0 | 0  | 0         | 0  |            |          |
| 7                | 0 | 0  | 0         | 0  |            |          |
| 8                | 0 | 0  | 0         | 0  |            |          |
| 9                | 0 | 0  | 0         | 0  |            |          |
| 10               | 0 | 0  | 0         | 0  |            |          |
| 11               | 0 | 0  | 0         | 0  |            |          |
| 12               | 0 | 0  | 0         | 0  |            |          |
| 13               | 0 | 0  | 0         | 0  |            |          |
| 14               | 0 | 0  | 0         | 0  |            |          |
| 15               | 0 | 0  | 0         | 0  |            |          |
| 16               | 0 | 0  | 0         | 0  |            |          |
| 17               | 0 | 0  | 0         | 0  |            |          |
| 18               | 0 | 0  | 0         | 0  |            |          |
| 19               | 0 | 0  | 0         | 0  |            |          |
| 20               | 0 | 0  | 0         | 0  |            |          |
| 21               | 0 | 0  | 0         | 0  |            |          |
| 22               | 0 | 0  | 0         | 0  |            |          |
| 23               | 0 | 0  | 0         | 0  |            |          |
| 24               | 0 | 0  | 0         | 0  |            |          |
| 25               | 0 | 0  | 0         | 0  |            |          |
| 26               | 0 | 0  | 0         | 0  |            |          |
| 27               | 0 | 0  | 0         | 0  |            |          |
| 28               | 0 | 0  | 0         | 0  |            |          |
| 29               | 0 | 0  | 0         | 0  |            |          |
| 30               | 0 | 0  | 0         | 0  |            |          |

Observer's Name (Print)  
MARK K. LOECHELT

Observer's Signature  
Mark K. Lochelet Date  
2/6/99

Organization  
ST. JOHNS RIVER POWER PARK

Certified By  
EASTERN TECHNICAL ASSOCIATES Date  
12/3/98

EPA

## VISIBLE EMISSION OBSERVATION FORM 1

 Method used (Circle One)  
 Method 9 203A 203B Other:

 Company Name  
 ST. JOHNS RIVER POWER PARK  
 Facility Name  
 ST. JOHNS RIVER POWER PARK  
 Street Address  
 11201 NEW BERLIN ROAD  
 City State Zip  
 JACKSONVILLE FL 32226

 Process Unit # Operating Mode  
 SHIP UNLOADING LIMESTONE  
 Control Equipment Operating Mode

 Describe Emission Point  
 CONVEYOR CT-1

 Height of Emiss. Pt. Height of Emiss. Pt. Rel. to Observer  
 Start End Start End  
 Distance to Emiss. Pt. Direction to Emiss. Pt. (Degrees)  
 Start End Start End

 Vertical Angle to Obs. Pt. Direction to Obs. Pt. (Degrees)  
 Start End Start End  
 Distance and Direction to Observation Point from Emission Point  
 Start End

 Describe Emissions  
 Start End  
 Emission Color Water Droplet Plume  
 Start End Attached ☐ Detached ☐ None ☐

 Describe Plume Background  
 Start End  
 Background Color Sky Conditions  
 Start End Start End  
 Wind Speed Wind Direction  
 Start End Start End  
 Ambient Temp. Wet Bulb Temp. RH Percent  
 Start End

Source Layout Sketch

Draw North Arrow  
☐ TN ☐ MN

X Observation Point

Observer's Position

140°

Sun Location Line

Stack With Plume

Sun

Wind

Longitude Latitude Declination

Additional Information

 Form Number 007-2 Page 2 of 2  
 Continued on VEO Form Number 007-1

| Observation Date | Time Zone | Start Time | End Time |    |
|------------------|-----------|------------|----------|----|
| Sec              | 0         | 15         | 30       | 45 |
| Min              |           |            |          |    |
| 1                | 0         | 0          | 0        | 0  |
| 2                | 0         | 0          | 0        | 0  |
| 3                | 0         | 0          | 0        | 0  |
| 4                | 0         | 0          | 0        | 0  |
| 5                | 0         | 0          | 0        | 0  |
| 6                | 0         | 0          | 0        | 0  |
| 7                | 0         | 0          | 0        | 0  |
| 8                | 0         | 0          | 0        | 0  |
| 9                | 0         | 0          | 0        | 0  |
| 10               | 0         | 0          | 0        | 0  |
| 11               | 0         | 0          | 0        | 0  |
| 12               | 0         | 0          | 0        | 0  |
| 13               | 0         | 0          | 0        | 0  |
| 14               | 0         | 0          | 0        | 0  |
| 15               | 0         | 0          | 0        | 0  |
| 16               | 0         | 0          | 0        | 0  |
| 17               | 0         | 0          | 0        | 0  |
| 18               | 0         | 0          | 0        | 0  |
| 19               | 0         | 0          | 0        | 0  |
| 20               | 0         | 0          | 0        | 0  |
| 21               | 0         | 0          | 0        | 0  |
| 22               | 0         | 0          | 0        | 0  |
| 23               | 0         | 0          | 0        | 0  |
| 24               | 0         | 0          | 0        | 0  |
| 25               | 0         | 0          | 0        | 0  |
| 26               | 0         | 0          | 0        | 0  |
| 27               | 0         | 0          | 0        | 0  |
| 28               | 0         | 0          | 0        | 0  |
| 29               | 0         | 0          | 0        | 0  |
| 30               | 0         | 0          | 0        | 0  |

 Observer's Name (Print)  
 MARK K. LOECHELT  
 Observer's Signature  
 Mark K. Loechelt  
 Organization  
 ST. JOHNS RIVER POWER PARK  
 Certified By  
 EASTERN TECHNICAL ASSOCIATES  
 Date  
 2/6/99  
 Date  
 12/3/98



EPA

## VISIBLE EMISSION OBSERVATION FORM 1

Method 1 (Circle One) 203A 203B Other \_\_\_\_\_

Company Name  
ST. JOHNS RIVER POWER PARK

Facility Name  
ST. JOHNS RIVER POWER PARK

Street Address  
11201 NEW BERLIN ROAD

City JACKSONVILLE State FL Zip 32226

Process SHIP UNLOADING LIMESTONE Unit # \_\_\_\_\_ Operating Mode 49% CAPACITY

Control Equipment WET SUPPRESSION Operating Mode 0% CAPACITY

Describe Emission Point  
TRANSFER POINT CONVEYOR CT-1 TO  
CONVEYOR CT-2

Height of Emiss. Pt. Start 25' End 25' Height of Emiss. Pt. Rel. to Observer Start 20' End 20'

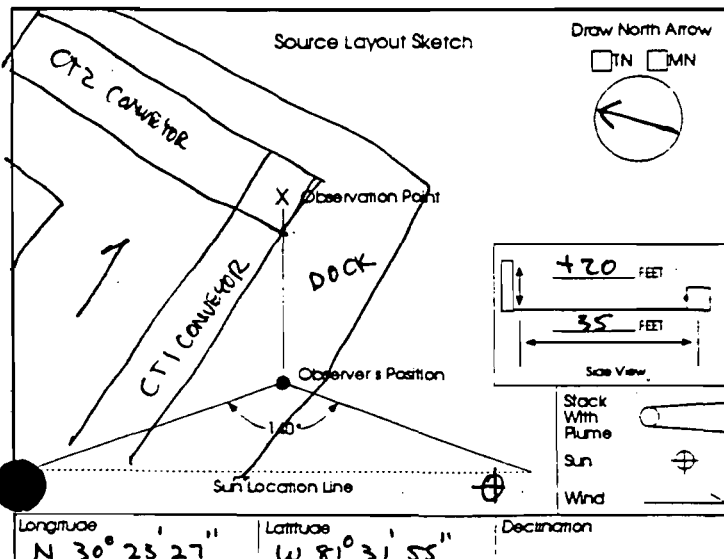
Distance to Emiss. Pt. Start 35' End 35' Direction to Emiss. Pt. (Degrees) Start 45° End 45°

Vertical Angle to Obs. Pt. Start 15° End 15° Direction to Obs. Pt. (Degrees) Start 045° End 045°

Distance and Direction to Observation Point from Emission Point Start 0'-0° End 0'-0°

Describe Emissions  
Start NONE End NONE  
Emission Color \_\_\_\_\_ Water Droplet Plume \_\_\_\_\_  
Start NONE End NONE Attached ☐ Detached ☐ None ☒

Describe Plume Background  
Start OPEN SKY End OPEN SKY  
Background Color \_\_\_\_\_ Sky Conditions \_\_\_\_\_  
Start BLUE End BLUE Start SCATTERED End SCATTERED  
Wind Speed \_\_\_\_\_ Wind Direction \_\_\_\_\_  
Start 3-5 End 3-5 Start W End NW  
Ambient Temp. \_\_\_\_\_ Wet Bulb Temp. \_\_\_\_\_ RH Percent \_\_\_\_\_  
Start 72°F End 72°F



Additional Information

Form Number 008-1 Page 1 of 2  
Continued on VEO Form Number 008-2

| Observation Date |   | Time Zone |    |    | Start Time | End Time |
|------------------|---|-----------|----|----|------------|----------|
| 2/6/99           |   | EST       |    |    | 1150       | 1250     |
| Sec              | 0 | 15        | 30 | 45 | Comments   |          |
| Min              |   |           |    |    |            |          |
| 1                | 0 | 0         | 0  | 0  |            |          |
| 2                | 0 | 0         | 0  | 0  |            |          |
| 3                | 0 | 0         | 0  | 0  |            |          |
| 4                | 0 | 0         | 0  | 0  |            |          |
| 5                | 0 | 0         | 0  | 0  |            |          |
| 6                | 0 | 0         | 0  | 0  |            |          |
| 7                | 0 | 0         | 0  | 0  |            |          |
| 8                | 0 | 0         | 0  | 0  |            |          |
| 9                | 0 | 0         | 0  | 0  |            |          |
| 10               | 0 | 0         | 0  | 0  |            |          |
| 11               | 0 | 0         | 0  | 0  |            |          |
| 12               | 0 | 0         | 0  | 0  |            |          |
| 13               | 0 | 0         | 0  | 0  |            |          |
| 14               | 0 | 0         | 0  | 0  |            |          |
| 15               | 0 | 0         | 0  | 0  |            |          |
| 16               | 0 | 0         | 0  | 0  |            |          |
| 17               | 0 | 0         | 0  | 0  |            |          |
| 18               | 0 | 0         | 0  | 0  |            |          |
| 19               | 0 | 0         | 0  | 0  |            |          |
| 20               | 0 | 0         | 0  | 0  |            |          |
| 21               | 0 | 0         | 0  | 0  |            |          |
| 22               | 0 | 0         | 0  | 0  |            |          |
| 23               | 0 | 0         | 0  | 0  |            |          |
| 24               | 0 | 0         | 0  | 0  |            |          |
| 25               | 0 | 0         | 0  | 0  |            |          |
| 26               | 0 | 0         | 0  | 0  |            |          |
| 27               | 0 | 0         | 0  | 0  |            |          |
| 28               | 0 | 0         | 0  | 0  |            |          |
| 29               | 0 | 0         | 0  | 0  |            |          |
| 30               | 0 | 0         | 0  | 0  |            |          |

Observer's Name (Print)  
MARK K. LOECHER

Observer's Signature  
Mark K. Locher Date 2/6/99

Organization  
ST. JOHNS RIVER POWER PARK

Certified by  
EASTERN TECHNICAL ASSOCIATES Date 12/3/98

EPA

## VISIBLE EMISSION OBSERVATION FORM 1

Method Used (Circle One) Method 9 203A 203B Other: \_\_\_\_\_

Company Name  
ST. JOHNS RIVER POWER PARK

Facility Name  
ST. JOHNS RIVER POWER PARK

Street Address  
11201 NEW BERLIN ROAD

City JACKSONVILLE State FL Zip 32226

Process SHIPUNLOADING LIMESTONE Unit # \_\_\_\_\_ Operating Mode \_\_\_\_\_

Control Equipment \_\_\_\_\_ Operating Mode \_\_\_\_\_

Describe Emission Point  
TRANSFER POINT CONVEYOR CT-1 TO CONVEYOR CT-2

Height of Emiss. Pt. \_\_\_\_\_ Height of Emiss. Pt. Rel. to Observer \_\_\_\_\_

Start \_\_\_\_\_ End \_\_\_\_\_ Start \_\_\_\_\_ End \_\_\_\_\_

Distance to Emiss. Pt. \_\_\_\_\_ Direction to Emiss. Pt. (Degrees) \_\_\_\_\_

Start \_\_\_\_\_ End \_\_\_\_\_ Start \_\_\_\_\_ End \_\_\_\_\_

Vertical Angle to Obs. Pt. \_\_\_\_\_ Direction to Obs. Pt. (Degrees) \_\_\_\_\_

Start \_\_\_\_\_ End \_\_\_\_\_ Start \_\_\_\_\_ End \_\_\_\_\_

Distance and Direction to Observation Point from Emission Point \_\_\_\_\_

Start \_\_\_\_\_ End \_\_\_\_\_

Describe Emissions

Start \_\_\_\_\_ End \_\_\_\_\_

Emission Color \_\_\_\_\_ Water Droplet Plume \_\_\_\_\_

Start \_\_\_\_\_ End \_\_\_\_\_ Attached ☐ Detached ☐ None ☐

Describe Plume Background

Start \_\_\_\_\_ End \_\_\_\_\_

Background Color \_\_\_\_\_ Sky Conditions \_\_\_\_\_

Start \_\_\_\_\_ End \_\_\_\_\_ Start \_\_\_\_\_ End \_\_\_\_\_

Wind Speed \_\_\_\_\_ Wind Direction \_\_\_\_\_

Start \_\_\_\_\_ End \_\_\_\_\_ Start \_\_\_\_\_ End \_\_\_\_\_

Ambient Temp. \_\_\_\_\_ Wet Bulb Temp. \_\_\_\_\_ RH Percent \_\_\_\_\_

Start \_\_\_\_\_ End \_\_\_\_\_

Source Layout Sketch

Draw North Arrow ☐ TN ☐ MN

X Observation Point

Observer's Position

140°

Sun Location Line

Scale View

Stack With Plume

Sun

Wind

Longitude \_\_\_\_\_ Latitude \_\_\_\_\_ Declination \_\_\_\_\_

Additional information \_\_\_\_\_

Form Number 008-2 Page 2 of 2  
Continued on VEO Form Number 008-1

| Observation Date |   | Time Zone |    |    | Start Time | End Time |
|------------------|---|-----------|----|----|------------|----------|
| 2/6/99           |   | EST       |    |    | 1150       | 1250     |
| Sec<br>Min       | 0 | 15        | 30 | 45 | Comments   |          |
| 1                | 0 | 0         | 0  | 0  |            |          |
| 2                | 0 | 0         | 0  | 0  |            |          |
| 3                | 0 | 0         | 0  | 0  |            |          |
| 4                | 0 | 0         | 0  | 0  |            |          |
| 5                | 0 | 0         | 0  | 0  |            |          |
| 6                | 0 | 0         | 0  | 0  |            |          |
| 7                | 0 | 0         | 0  | 0  |            |          |
| 8                | 0 | 0         | 0  | 0  |            |          |
| 9                | 0 | 0         | 0  | 0  |            |          |
| 10               | 0 | 0         | 0  | 0  |            |          |
| 11               | 0 | 0         | 0  | 0  |            |          |
| 12               | 0 | 0         | 0  | 0  |            |          |
| 13               | 0 | 0         | 0  | 0  |            |          |
| 14               | 0 | 0         | 0  | 0  |            |          |
| 15               | 0 | 0         | 0  | 0  |            |          |
| 16               | 0 | 0         | 0  | 0  |            |          |
| 17               | 0 | 0         | 0  | 0  |            |          |
| 18               | 0 | 0         | 0  | 0  |            |          |
| 19               | 0 | 0         | 0  | 0  |            |          |
| 20               | 0 | 0         | 0  | 0  |            |          |
| 21               | 0 | 0         | 0  | 0  |            |          |
| 22               | 0 | 0         | 0  | 0  |            |          |
| 23               | 0 | 0         | 0  | 0  |            |          |
| 24               | 0 | 0         | 0  | 0  |            |          |
| 25               | 0 | 0         | 0  | 0  |            |          |
| 26               | 0 | 0         | 0  | 0  |            |          |
| 27               | 0 | 0         | 0  | 0  |            |          |
| 28               | 0 | 0         | 0  | 0  |            |          |
| 29               | 0 | 0         | 0  | 0  |            |          |
| 30               | 0 | 0         | 0  | 0  |            |          |

Observer's Name (Print) MARK V. LOECHELT

Observer's Signature Mark V. Lochelt Date 2/6/99

Organization ST. JOHNS RIVER POWER PARK

Certified By EASTERN TECHNICAL ASSOCIATES Date 12/3/98

# VISIBLE EMISSION OBSERVATION FORM 1

Form Number 010-1 Page 1 of 2  
Continued on VEO Form Number 010-2

Method Used (Circle One)  
 Method 9 203A 2038 Other: \_\_\_\_\_

|                                             |             |              |
|---------------------------------------------|-------------|--------------|
| Company Name<br>ST. JOHNS RIVER POWER PARK  |             |              |
| Facility Name<br>ST. JOHNS RIVER POWER PARK |             |              |
| Street Address<br>11201 NEW BERLIN ROAD     |             |              |
| City<br>JACKSONVILLE                        | State<br>FL | Zip<br>32226 |

|                        |        |                |
|------------------------|--------|----------------|
| Process                | Unit # | Operating Mode |
| SHIP UNLOADING LESTONE |        | 44% CAPACITY   |
| Control Equipment      |        | Operating Mode |
| WRT SUPPRESSION        |        | 0% CAPACITY    |

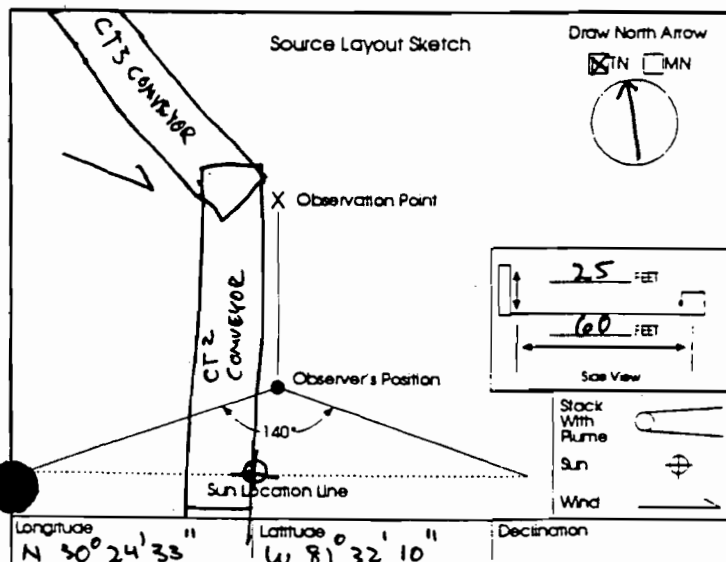
Describe Emission Point  
TRANSFER POINT CONVEYOR CT-2 TO CONVEYOR CT-3

|                        |                   |                                       |                     |
|------------------------|-------------------|---------------------------------------|---------------------|
| Height of Emiss. Pt.   | Start 30' End 30' | Height of Emiss. Pt. Rel. to Observer | Start 25' End 25'   |
| Distance to Emiss. Pt. | Start 60' End 60' | Direction to Emiss. Pt. (Degrees)     | Start 345° End 345° |

|                                             |                                       |
|---------------------------------------------|---------------------------------------|
| Vertical Angle to Obs. Pt.                  | Direction to Obs. Pt. (Degrees)       |
| Start $15^{\circ}$ MLL End $15^{\circ}$ MLL | Start $360^{\circ}$ End $360^{\circ}$ |
| Distance and Direction to Observation Point |                                       |
| Start $5' - 90^{\circ}$                     | End $5' - 90^{\circ}$                 |

|                    |                     |                                                                                                              |
|--------------------|---------------------|--------------------------------------------------------------------------------------------------------------|
| Describe Emissions |                     |                                                                                                              |
| Start              | NONE                | End NONE                                                                                                     |
| Emission Color     | Water Droplet Plume |                                                                                                              |
| Start NONE         | End NONE            | Attached <input type="checkbox"/> Detached <input type="checkbox"/> None <input checked="" type="checkbox"/> |

|                           |          |                |            |
|---------------------------|----------|----------------|------------|
| Describe Plume background |          |                |            |
| Start                     | OPEN SKY | End            | OPEN SKY   |
| Background Color          |          | Sky Conditions |            |
| Start                     | BLUE     | End            | CLEAR      |
| Wind Speed                |          | Wind Direction |            |
| Start                     | 3-5      | End            | NW         |
| Ambient Temp.             |          | Wet Bulb Temp. |            |
| Start                     | 73°F     | End            | 74°F       |
|                           |          |                | RH Percent |



|                        |
|------------------------|
| Additional information |
|                        |

| Observation Date<br>2/6/99 |   | Time Zone<br>EST |    | Start Time<br>1310 | End Time<br>1410 |
|----------------------------|---|------------------|----|--------------------|------------------|
| Sec<br>Min                 | 0 | 15               | 30 | 45                 | Comments         |
| 1                          | 0 | 0                | 0  | 0                  |                  |
| 2                          | 0 | 0                | 0  | 0                  |                  |
| 3                          | 0 | 0                | 0  | 0                  |                  |
| 4                          | 0 | 0                | 0  | 0                  |                  |
| 5                          | 0 | 0                | 0  | 0                  |                  |
| 6                          | 0 | 0                | 0  | 0                  |                  |
| 7                          | 0 | 0                | 0  | 0                  |                  |
| 8                          | 0 | 0                | 0  | 0                  |                  |
| 9                          | 0 | 0                | 0  | 0                  |                  |
| 10                         | 0 | 0                | 0  | 0                  |                  |
| 11                         | 0 | 0                | 0  | 0                  |                  |
| 12                         | 0 | 0                | 0  | 0                  |                  |
| 13                         | 0 | 0                | 0  | 0                  |                  |
| 14                         | 0 | 0                | 0  | 0                  |                  |
| 15                         | 0 | 0                | 0  | 0                  |                  |
| 16                         | 0 | 0                | 0  | 0                  |                  |
| 17                         | 0 | 0                | 0  | 0                  |                  |
| 18                         | 0 | 0                | 0  | 0                  |                  |
| 19                         | 0 | 0                | 0  | 0                  |                  |
| 20                         | 0 | 0                | 0  | 0                  |                  |
| 21                         | 0 | 0                | 0  | 0                  |                  |
| 22                         | 0 | 0                | 0  | 0                  |                  |
| 23                         | 0 | 0                | 0  | 0                  |                  |
| 24                         | 0 | 0                | 0  | 0                  |                  |
| 25                         | 0 | 0                | 0  | 0                  |                  |
| 26                         | 0 | 0                | 0  | 0                  |                  |
| 27                         | 0 | 0                | 0  | 0                  |                  |
| 28                         | 0 | 0                | 0  | 0                  |                  |
| 29                         | 0 | 0                | 0  | 0                  |                  |
| 30                         | 0 | 0                | 0  | 0                  |                  |

|                                                |                 |
|------------------------------------------------|-----------------|
| Observer's Name (Print)<br>MARK K. LOECHELT    |                 |
| Observer's Signature<br><i>Mark K. Lochelt</i> | Date<br>2/4/99  |
| Organization<br>ST. JOHN'S RIVER POWER PARK    |                 |
| Certified By<br>EASTERN TECHNICAL ASSOCIATES   | Date<br>12/3/98 |

EPA

## VISIBLE EMISSION OBSERVATION FORM 1

Method Used (Circle One)  
Method 9 203A 2038 Other: \_\_\_\_\_

Company Name  
ST. JOHNS RIVER POWER PARK

Facility Name  
ST. JOHNS RIVER POWER PARK

Street Address  
11201 NEW BERLIN ROAD

City State Zip  
JACKSONVILLE FL 32226

Process Unit # Operating Mode  
SHIP UNLOADING LIMESTONE

Control Equipment Operating Mode

Describe Emission Point  
TRANSFER POINT CONVEYOR CT-2 TO CONVEYOR CT-3

Height of Emiss. Pt. Height of Emiss. Pt. Rel. to Observer  
Start End Start End

Distance to Emiss. Pt. Direction to Emiss. Pt. (Degrees)  
Start End Start End

Vertical Angle to Obs. Pt. Direction to Obs. Pt. (Degrees)  
Start End Start End

Distance and Direction to Observation Point from Emission Point  
1 End

Describe Emissions

Start End  
Emission Color Water Droplet Plume

Start End Attached ☐ Detached ☐ None ☐

Describe Plume Background

Start End  
Background Color Sky Conditions

Start End Start End  
Wind Speed Wind Direction

Start End Start End  
Ambient Temp. Wet Bulb Temp. RH Percent

Start End

Source Layout Sketch

Draw North Arrow  
☐ TN ☐ MN

Observer's Position

Observation Point

Sun Location Line

140°

Side View

Stack With Plume

Sun

Wind

Longitude Latitude Decimation

Additional Information

Form Number 010-2 Page 2 of 2  
Continued on VEO Form Number 010-1

| Observation Date | Time Zone | Start Time | End Time |    |
|------------------|-----------|------------|----------|----|
| Sec              | 0         | 15         | 30       | 45 |
| Min              |           |            |          |    |
| 1                | 0         | 0          | 0        | 0  |
| 2                | 0         | 0          | 0        | 0  |
| 3                | 0         | 0          | 0        | 0  |
| 4                | 0         | 0          | 0        | 0  |
| 5                | 0         | 0          | 0        | 0  |
| 6                | 0         | 0          | 0        | 0  |
| 7                | 0         | 0          | 0        | 0  |
| 8                | 0         | 0          | 0        | 0  |
| 9                | 0         | 0          | 0        | 0  |
| 10               | 0         | 0          | 0        | 0  |
| 11               | 0         | 0          | 0        | 0  |
| 12               | 0         | 0          | 0        | 0  |
| 13               | 0         | 0          | 0        | 0  |
| 14               | 0         | 0          | 0        | 0  |
| 15               | 0         | 0          | 0        | 0  |
| 16               | 0         | 0          | 0        | 0  |
| 17               | 0         | 0          | 0        | 0  |
| 18               | 0         | 0          | 0        | 0  |
| 19               | 0         | 0          | 0        | 0  |
| 20               | 0         | 0          | 0        | 0  |
| 21               | 0         | 0          | 0        | 0  |
| 22               | 0         | 0          | 0        | 0  |
| 23               | 0         | 0          | 0        | 0  |
| 24               | 0         | 0          | 0        | 0  |
| 25               | 0         | 0          | 0        | 0  |
| 26               | 0         | 0          | 0        | 0  |
| 27               | 0         | 0          | 0        | 0  |
| 28               | 0         | 0          | 0        | 0  |
| 29               | 0         | 0          | 0        | 0  |
| 30               | 0         | 0          | 0        | 0  |

Observer's Name (Print)  
MARK K. LOECHERT

Observer's Signature  
Mark K. Loechert

Date  
2/6/99

Organization  
ST. JOHNS RIVER POWER PARK

Certified By  
EASTERN TECHNICAL ASSOCIATES

Date  
12/3/98

EPA

## VISIBLE EMISSION OBSERVATION FORM 1

Method 9 (Side One) 203A 203B Other:

 Company Name  
 ST. JOHNS RIVER POWER PARK  
 Facility Name  
 ST. JOHNS RIVER POWER PARK  
 Street Address  
 11701 NEW BERLIN ROAD  
 City  
 JACKSONVILLE State  
 FL Zip  
 32226

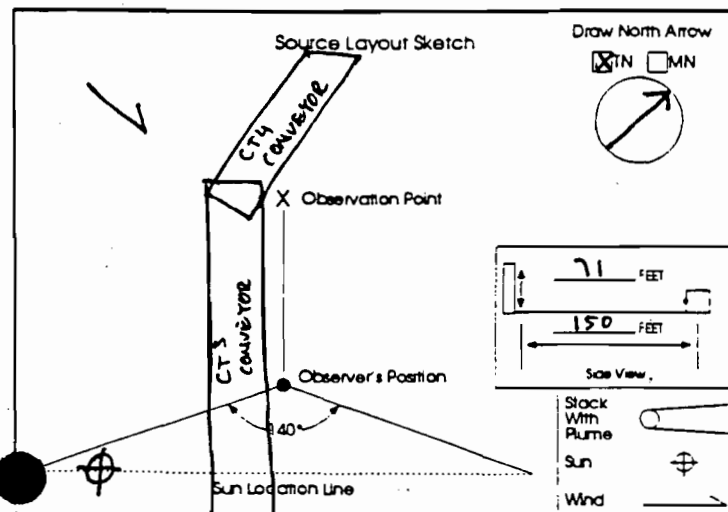
 Process  
 SHIP UNLOADING LIMESTONE Unit #  
 Operating Mode  
 4670 CAPACITY  
 Control Equipment  
 WBT SUPPRESSION Operating Mode  
 070 CAPACITY

 Describe Emission Point  
 TRANSFER POINT CONVERTOR CT-3 TO CONVERTOR CT-4

 Height of Emiss. Pt.  
 Start 75' End 75' Height of Emiss. Pt. Rel. to Observer  
 Start 71' End 71'  
 Distance to Emiss. Pt.  
 Start 150' End 150' Direction to Emiss. Pt. (Degrees)  
 Start 288° End 288°

 Vertical Angle to Obs. Pt.  
 Start 20° End 20° Direction to Obs. Pt. (Degrees)  
 Start 300° End 300°  
 Distance and Direction to Observation Point from Emission Point  
 Start 20' - 54° End 20' - 54°

 Describe Emissions  
 Start NONE End NONE  
 Emission Color  
 Start NONE End NONE Water Droplet Plume  
 Attached ☐ Detached ☐ None ☒

 Describe Plume Background  
 Start OPEN SKY End OPEN SKY  
 Background Color  
 Start BLUE End BLUE Sky Conditions  
 Start CLEAR End CLEAR  
 Wind Speed  
 Start 3-5 End 3-5 Wind Direction  
 Start W End W  
 Ambient Temp.  
 Start 75°F End 75°F Wet Bulb Temp.  
 RH Percent

 Longitude  
 N 30° 25' 18" Latitude  
 W 81° 32' 48" Declination

Additional Information

 Form Number 012-1 Page 1 of 2  
 Continued on VEO Form Number 012-2

| Observation Date |   | Time Zone |    |    | Start Time | End Time |
|------------------|---|-----------|----|----|------------|----------|
| 2/6/99           |   | EST       |    |    | 1430       | 1530     |
| Sec<br>Min       | 0 | 15        | 30 | 45 | Comments   |          |
| 1                | 0 | 0         | 0  | 0  |            |          |
| 2                | 0 | 0         | 0  | 0  |            |          |
| 3                | 0 | 0         | 0  | 0  |            |          |
| 4                | 0 | 0         | 0  | 0  |            |          |
| 5                | 0 | 0         | 0  | 0  |            |          |
| 6                | 0 | 0         | 0  | 0  |            |          |
| 7                | 0 | 0         | 0  | 0  |            |          |
| 8                | 0 | 0         | 0  | 0  |            |          |
| 9                | 0 | 0         | 0  | 0  |            |          |
| 10               | 0 | 0         | 0  | 0  |            |          |
| 11               | 0 | 0         | 0  | 0  |            |          |
| 12               | 0 | 0         | 0  | 0  |            |          |
| 13               | 0 | 0         | 0  | 0  |            |          |
| 14               | 0 | 0         | 0  | 0  |            |          |
| 15               | 0 | 0         | 0  | 0  |            |          |
| 16               | 0 | 0         | 0  | 0  |            |          |
| 17               | 0 | 0         | 0  | 0  |            |          |
| 18               | 0 | 0         | 0  | 0  |            |          |
| 19               | 0 | 0         | 0  | 0  |            |          |
| 20               | 0 | 0         | 0  | 0  |            |          |
| 21               | 0 | 0         | 0  | 0  |            |          |
| 22               | 0 | 0         | 0  | 0  |            |          |
| 23               | 0 | 0         | 0  | 0  |            |          |
| 24               | 0 | 0         | 0  | 0  |            |          |
| 25               | 0 | 0         | 0  | 0  |            |          |
| 26               | 0 | 0         | 0  | 0  |            |          |
| 27               | 0 | 0         | 0  | 0  |            |          |
| 28               | 0 | 0         | 0  | 0  |            |          |
| 29               | 0 | 0         | 0  | 0  |            |          |
| 30               | 0 | 0         | 0  | 0  |            |          |

 Observer's Name (Print)  
 MARK K. LOECHELT  
 Observer's Signature  
 Mark K. Lochelet Date  
 2/6/99  
 Organization  
 ST. JOHNS RIVER POWER PARK  
 Certified by  
 EASTERN TECHNICAL ASSOCIATES Date  
 12/3/98

EPA

## VISIBLE EMISSION OBSERVATION FORM 1

Method Used (Circle One)  
Method 9 203A 203B Other: \_\_\_\_\_

Company Name  
ST. JOHNS RIVER POWER PARK

Facility Name  
ST. JOHNS RIVER POWER PARK

Street Address  
11201 NEW BERLIN ROAD

City State Zip  
JACKSONVILLE FL 32226

Process Unit # Operating Mode  
SHIP UNLOADING Limestone

Control Equipment Operating Mode

Describe Emission Point  
TRANSFER POINT CONVERTER CT-3 TO CONVEYOR CT-4

Height of Emiss. Pt. Height of Emiss. Pt. Rel. to Observer  
Start End Start End

Distance to Emiss. Pt. Direction to Emiss. Pt. (Degrees)  
Start End Start End

Vertical Angle to Obs. Pt. Direction to Obs. Pt. (Degrees)  
Start End Start End

Distance and Direction to Observation Point from Emission Point  
Start End

Describe Emissions

Start End  
Emission Color Water Droplet Plume

Start End Attached ☐ Detached ☐ None ☐

Describe Plume Background

Start End  
Background Color Sky Conditions

Start End  
Wind Speed Wind Direction

Start End  
Ambient Temp. Wet Bulb Temp. RH Percent

Start End

Source Layout Sketch

Draw North Arrow  
☐ TN ☐ MN

Observer's Position

Observation Point

140°

Sun Location Line

Stack With Plume

Sun

Wind

Longitude Latitude Declination

Additional Information

Form Number 012-2 Page 2 of 2  
Continued on VEO Form Number 012-1

| Observation Date |   | Time Zone |    |    | Start Time | End Time |
|------------------|---|-----------|----|----|------------|----------|
| 2/6/99           |   | EST       |    |    | 1430       | 1530     |
| Sec<br>Min       | 0 | 15        | 30 | 45 | Comments   |          |
| 1                | 0 | 0         | 0  | 0  |            |          |
| 2                | 0 | 0         | 0  | 0  |            |          |
| 3                | 0 | 0         | 0  | 0  |            |          |
| 4                | 0 | 0         | 0  | 0  |            |          |
| 5                | 0 | 0         | 0  | 0  |            |          |
| 6                | 0 | 0         | 0  | 0  |            |          |
| 7                | 0 | 0         | 0  | 0  |            |          |
| 8                | 0 | 0         | 0  | 0  |            |          |
| 9                | 0 | 0         | 0  | 0  |            |          |
| 10               | 0 | 0         | 0  | 0  |            |          |
| 11               | 0 | 0         | 0  | 0  |            |          |
| 12               | 0 | 0         | 0  | 0  |            |          |
| 13               | 0 | 0         | 0  | 0  |            |          |
| 14               | 0 | 0         | 0  | 0  |            |          |
| 15               | 0 | 0         | 0  | 0  |            |          |
| 16               | 0 | 0         | 0  | 0  |            |          |
| 17               | 0 | 0         | 0  | 0  |            |          |
| 18               | 0 | 0         | 0  | 0  |            |          |
| 19               | 0 | 0         | 0  | 0  |            |          |
| 20               | 0 | 0         | 0  | 0  |            |          |
| 21               | 0 | 0         | 0  | 0  |            |          |
| 22               | 0 | 0         | 0  | 0  |            |          |
| 23               | 0 | 0         | 0  | 0  |            |          |
| 24               | 0 | 0         | 0  | 0  |            |          |
| 25               | 0 | 0         | 0  | 0  |            |          |
| 26               | 0 | 0         | 0  | 0  |            |          |
| 27               | 0 | 0         | 0  | 0  |            |          |
| 28               | 0 | 0         | 0  | 0  |            |          |
| 29               | 0 | 0         | 0  | 0  |            |          |
| 30               | 0 | 0         | 0  | 0  |            |          |

Observer's Name (Print)  
MARK K. LOECHMELT

Observer's Signature  
Mark K. Loechmelt

Organization  
ST. JOHNS RIVER POWER PARK

Certified By  
EASTERN TECHNICAL ASSOCIATES

Date  
2/6/99

Date  
12/3/99

EPA

## VISIBLE EMISSION OBSERVATION FORM 1

Method Used (Circle One) Method 9 203A 203B Other: \_\_\_\_\_

Company Name St. Johns River Power Park.  
 Facility Name St. Johns River Power Park.  
 Street Address 11201 New Berlin Rd.  
 City Jacksonville State FL Zip 32226.

Process Ship Unloading Limbstone Unit # \_\_\_\_\_ Operating Mode 58% CAPACITY  
 Control Equipment CONDITIONED MATERIAL Operating Mode 0% capacity

Describe Emission Point Conveyor CT-4  
 Height of Emiss. Pt. Start 25' End 25' Height of Emiss. Pt. Rel. to Observer Start 30' End 30' 12  
 Distance to Emiss. Pt. Start 150M End 150M Direction to Emiss. Pt. (Degrees) Start 14°NE End 14°NE

Vertical Angle to Obs. Pt. Start 4° End 4° Direction to Obs. Pt. (Degrees) Start 14°NE End 14°NE  
 Distance and Direction to Observation Point from Emission Point Start 5' SW End 5' SW 12

Describe Emissions  
 Start none End none  
 Emission Color Start none End none  
 Start none End none Attached ☐ Detached ☐ None ☒

Describe Plume Background  
 Start N/A End N/A  
 Background Color Start BLUE End BLUE Sky Conditions Start BLUE/clear End BLUE/clear  
 Wind Speed Start 0-5 End 0-5 Wind Direction Start NW End NW 12  
 Ambient Temp Start 78°F End 80°F Wet Bulb Temp. Start 65°F RH Percent 46%

Source Layout Sketch  
 Draw North Arrow ☐ TN ☐ MN  
 X Observation Point  
 Observer's Position  
 22 Track  
 Sun Location Line  
 Longitude N 30° 26' 29" Latitude W 81° 32' 57" Declination  
 Stack With Plume  
 Sun  
 Wind

Additional Information

Form Number 013-1 Page 1 of 2  
 Continued on VEO Form Number 013-2

| Observation Date |   | Time Zone |    |    | Start Time | End Time |
|------------------|---|-----------|----|----|------------|----------|
| 2/6/99           |   |           |    |    | 0935       | 1035     |
| Sec              | 0 | 15        | 30 | 45 | Comments   |          |
| Min              |   |           |    |    |            |          |
| 1                | 0 | 0         | 0  | 0  |            |          |
| 2                | 0 | 0         | 0  | 0  |            |          |
| 3                | 0 | 0         | 0  | 0  |            |          |
| 4                | 0 | 0         | 0  | 0  |            |          |
| 5                | 0 | 0         | 0  | 0  |            |          |
| 6                | 0 | 0         | 0  | 0  |            |          |
| 7                | 0 | 0         | 0  | 0  |            |          |
| 8                | 0 | 0         | 0  | 0  |            |          |
| 9                | 0 | 0         | 0  | 0  |            |          |
| 10               | 0 | 0         | 0  | 0  |            |          |
| 11               | 0 | 0         | 0  | 0  |            |          |
| 12               | 0 | 0         | 0  | 0  |            |          |
| 13               | 0 | 0         | 0  | 0  |            |          |
| 14               | 0 | 0         | 0  | 0  |            |          |
| 15               | 0 | 0         | 0  | 0  |            |          |
| 16               | 0 | 0         | 0  | 0  |            |          |
| 17               | 0 | 0         | 0  | 0  |            |          |
| 18               | 0 | 0         | 0  | 0  |            |          |
| 19               | 0 | 0         | 0  | 0  |            |          |
| 20               | 0 | 0         | 0  | 0  |            |          |
| 21               | 0 | 0         | 0  | 0  |            |          |
| 22               | 0 | 0         | 0  | 0  |            |          |
| 23               | 0 | 0         | 0  | 0  |            |          |
| 24               | 0 | 0         | 0  | 0  |            |          |
| 25               | 0 | 0         | 0  | 0  |            |          |
| 26               | 0 | 0         | 0  | 0  |            |          |
| 27               | 0 | 0         | 0  | 0  |            |          |
| 28               | 0 | 0         | 0  | 0  |            |          |
| 29               | 0 | 0         | 0  | 0  |            |          |
| 30               | 0 | 0         | 0  | 0  |            |          |

Observer's Name (Print) Alvaro Castro  
 Observer's Signature Alvaro Castro Date 2/6/99  
 Organization St. Johns River Power Park.  
 Certified by Extern Technical Associates Date 12/2/98

EPA

## VISIBLE EMISSION OBSERVATION FORM 1

Method Used (Circle One)  
Method 9 203A 203B Other: \_\_\_\_\_

Company Name *St. Johns River Power Park.*  
 Facility Name *St. Johns River Power Park.*  
 Street Address *11201 New Berlin Rd.*  
 City *Tacksonville* State *FL* Zip *37726*

Process *Ship Unloading Limestone* Unit # \_\_\_\_\_ Operating Mode \_\_\_\_\_  
 Control Equipment \_\_\_\_\_ Operating Mode \_\_\_\_\_

Describe Emission Point *Conveyor CT-4*

Height of Emiss. Pt. \_\_\_\_\_ Height of Emiss. Pt. Rel. to Observer \_\_\_\_\_  
 Start \_\_\_\_\_ End \_\_\_\_\_ Start \_\_\_\_\_ End \_\_\_\_\_  
 Distance to Emiss. Pt. \_\_\_\_\_ Direction to Emiss. Pt. (Degrees) \_\_\_\_\_  
 Start \_\_\_\_\_ End \_\_\_\_\_ Start \_\_\_\_\_ End \_\_\_\_\_

Vertical Angle to Obs. Pt. \_\_\_\_\_ Direction to Obs. Pt. (Degrees) \_\_\_\_\_  
 Start \_\_\_\_\_ End \_\_\_\_\_ Start \_\_\_\_\_ End \_\_\_\_\_  
 Distance and Direction to Observation Point from Emission Point \_\_\_\_\_  
 Start \_\_\_\_\_ End \_\_\_\_\_

Describe Emissions  
 Start \_\_\_\_\_ End \_\_\_\_\_  
 Emission Color \_\_\_\_\_ Water Droplet Plume \_\_\_\_\_  
 Start \_\_\_\_\_ End \_\_\_\_\_ Attached ☐ Detached ☐ None ☐

Describe Plume Background  
 Start \_\_\_\_\_ End \_\_\_\_\_  
 Background Color \_\_\_\_\_ Sky Conditions \_\_\_\_\_  
 Start \_\_\_\_\_ End \_\_\_\_\_ Start \_\_\_\_\_ End \_\_\_\_\_  
 Wind Speed \_\_\_\_\_ Wind Direction \_\_\_\_\_  
 Start \_\_\_\_\_ End \_\_\_\_\_ Start \_\_\_\_\_ End \_\_\_\_\_  
 Ambient Temp. \_\_\_\_\_ Wet Bulb Temp. \_\_\_\_\_ RH Percent \_\_\_\_\_  
 Start \_\_\_\_\_ End \_\_\_\_\_

Source Layout Sketch

Draw North Arrow  
☐ TN ☐ MN

Observer's Position

140°

Sun Location Line

Stack With Plume

Sun

Wind

Longitude \_\_\_\_\_ Latitude \_\_\_\_\_ Direction \_\_\_\_\_

Additional Information

Form Number *013-2* Page *2* of *2*  
 Continued on VEO Form Number *013-1*

| Observation Date<br>2/6/99 |   | Time Zone |    |    | Start Time<br>0935 | End Time<br>1035 |
|----------------------------|---|-----------|----|----|--------------------|------------------|
| Sec<br>Min                 | 0 | 15        | 30 | 45 | Comments           |                  |
| 1                          | 0 | 0         | 0  | 0  |                    |                  |
| 2                          | 0 | 0         | 0  | 0  |                    |                  |
| 3                          | 0 | 0         | 0  | 0  |                    |                  |
| 4                          | 0 | 0         | 0  | 0  |                    |                  |
| 5                          | 0 | 0         | 0  | 0  |                    |                  |
| 6                          | 0 | 0         | 0  | 0  |                    |                  |
| 7                          | 0 | 0         | 0  | 0  |                    |                  |
| 8                          | 0 | 0         | 0  | 0  |                    |                  |
| 9                          | 0 | 0         | 0  | 0  |                    |                  |
| 10                         | 0 | 0         | 0  | 0  |                    |                  |
| 11                         | 0 | 0         | 0  | 0  |                    |                  |
| 12                         | 0 | 0         | 0  | 0  |                    |                  |
| 13                         | 0 | 0         | 0  | 0  |                    |                  |
| 14                         | 0 | 0         | 0  | 0  |                    |                  |
| 15                         | 0 | 0         | 0  | 0  |                    |                  |
| 16                         | 0 | 0         | 0  | 0  |                    |                  |
| 17                         | 0 | 0         | 0  | 0  |                    |                  |
| 18                         | 0 | 0         | 0  | 0  |                    |                  |
| 19                         | 0 | 0         | 0  | 0  |                    |                  |
| 20                         | 0 | 0         | 0  | 0  |                    |                  |
| 21                         | 0 | 0         | 0  | 0  |                    |                  |
| 22                         | 0 | 0         | 0  | 0  |                    |                  |
| 23                         | 0 | 0         | 0  | 0  |                    |                  |
| 24                         | 0 | 0         | 0  | 0  |                    |                  |
| 25                         | 0 | 0         | 0  | 0  |                    |                  |
| 26                         | 0 | 0         | 0  | 0  |                    |                  |
| 27                         | 0 | 0         | 0  | 0  |                    |                  |
| 28                         | 0 | 0         | 0  | 0  |                    |                  |
| 29                         | 0 | 0         | 0  | 0  |                    |                  |
| 30                         | 0 | 0         | 0  | 0  |                    |                  |

Observer's Name (Print) *ALVARO CASTRO.*  
 Observer's Signature *Alvaro Castro* Date *2/6/99*  
 Organization *St. Johns River Power Park.*  
 Certified By *Eastern Technical Assoc.* Date *12/2/98*



EPA

## VISIBLE EMISSION OBSERVATION FORM 1

Method Used (Circle One) Method 9 203A 203B Other: \_\_\_\_\_

Company Name St. Johns River Power Park  
 Facility Name St. Johns River Power Park  
 Street Address 11201 New Berlin Rd.  
 City Jacksonville State FL Zip 32266

Process Ship Unloading limestone Unit # \_\_\_\_\_ Operating Mode 58% capacity  
 Control Equipment Conditioned Material Operating Mode 0% capacity

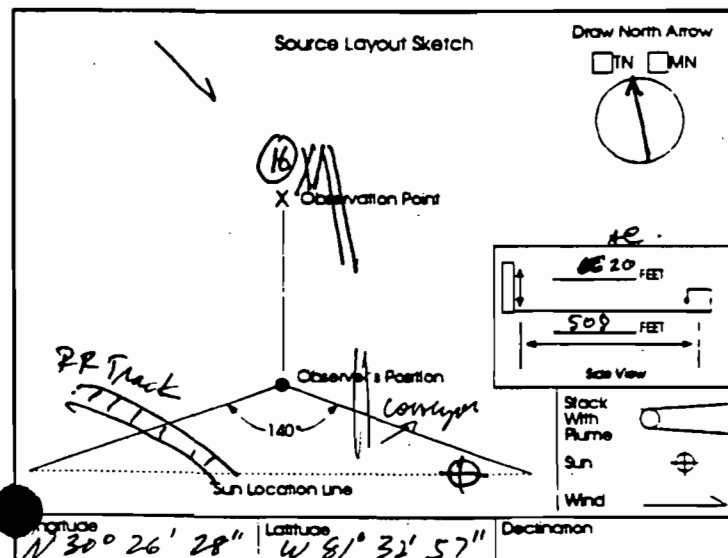
Describe Emission Point: Transfer Point CT-4 Trailing Conveyor S1

Height of Emiss. Pt. Start 20' End 20' Height of Emiss. Pt. Rel. to Observer Start 25' End 25' NE  
 Distance to Emiss. Pt. Start 155m End 155m Direction to Emiss. Pt. (Degrees) Start 12° NE End 12° NE

Vertical Angle to Obs. Pt. Start 4° End 4° Direction to Obs. Pt. (Degrees) Start 12° NE End 12° NE  
 Distance and Direction to Observation Point from Emission Point Start 4° SW End 4° SW NE

Describe Emissions  
 Start none End none  
 Emission Color Start none End none Water Droplet Plume Attached ☐ Detached ☐ None ☒

Describe Plume Background  
 Start N/A End \_\_\_\_\_  
 Background Color Start Blue End Blue Sky Conditions Start Blue/clear End Blue/clear  
 Wind Speed Start 0-5 End 0-5 Wind Direction Start NW End NW NE  
 Ambient Temp Start 78°F End 80°F Wet Bulb Temp 65°F RH Percent 46%



Additional information

Form Number 016-1 Page 1 of 2  
 Continued on VEO Form Number 016-2

| Observation Date |   | Time Zone |    |    | Start Time | End Time |
|------------------|---|-----------|----|----|------------|----------|
| 2/6/99           |   |           |    |    | 0935       | 1035     |
| Sec<br>Min       | 0 | 15        | 30 | 45 | Comments   |          |
| 1                | 0 | 0         | 0  | 0  |            |          |
| 2                | 0 | 0         | 0  | 0  |            |          |
| 3                | 0 | 0         | 0  | 0  |            |          |
| 4                | 0 | 0         | 0  | 0  |            |          |
| 5                | 0 | 0         | 0  | 0  |            |          |
| 6                | 0 | 0         | 0  | 0  |            |          |
| 7                | 0 | 0         | 0  | 0  |            |          |
| 8                | 0 | 0         | 0  | 0  |            |          |
| 9                | 0 | 0         | 0  | 0  |            |          |
| 10               | 0 | 0         | 0  | 0  |            |          |
| 11               | 0 | 0         | 0  | 0  |            |          |
| 12               | 0 | 0         | 0  | 0  |            |          |
| 13               | 0 | 0         | 0  | 0  |            |          |
| 14               | 0 | 0         | 0  | 0  |            |          |
| 15               | 0 | 0         | 0  | 0  |            |          |
| 16               | 0 | 0         | 0  | 0  |            |          |
| 17               | 0 | 0         | 0  | 0  |            |          |
| 18               | 0 | 0         | 0  | 0  |            |          |
| 19               | 0 | 0         | 0  | 0  |            |          |
| 20               | 0 | 0         | 0  | 0  |            |          |
| 21               | 0 | 0         | 0  | 0  |            |          |
| 22               | 0 | 0         | 0  | 0  |            |          |
| 23               | 0 | 0         | 0  | 0  |            |          |
| 24               | 0 | 0         | 0  | 0  |            |          |
| 25               | 0 | 0         | 0  | 0  |            |          |
| 26               | 0 | 0         | 0  | 0  |            |          |
| 27               | 0 | 0         | 0  | 0  |            |          |
| 28               | 0 | 0         | 0  | 0  |            |          |
| 29               | 0 | 0         | 0  | 0  |            |          |
| 30               | 0 | 0         | 0  | 0  |            |          |

Observer's Name (Print) Alvaro Castro  
 Observer's Signature Alvaro Castro Date 2/6/99  
 Organization St. Johns River Power Park  
 Certified By Eastern Technical Associates Date 12/2/98

EPA

## VISIBLE EMISSION OBSERVATION FORM 1

|                              |       |      |        |
|------------------------------|-------|------|--------|
| Form Number                  | 016-2 | Page | 2 of 2 |
| Continued on VEO Form Number |       | 016- | 1      |

|                          |          |      |      |        |
|--------------------------|----------|------|------|--------|
| Method Used (Circle One) | Method 9 | 203A | 203B | Other: |
|--------------------------|----------|------|------|--------|

|                |                             |       |    |
|----------------|-----------------------------|-------|----|
| Company Name   | St. Johns River Power Plant |       |    |
| Facility Name  | St. Johns River Power Plant |       |    |
| Street Address | 11201 New Berlin Rd.        |       |    |
| City           | Jacksonville                | State | FL |
| Zip            | 32226                       |       |    |

|                   |                          |        |  |                |
|-------------------|--------------------------|--------|--|----------------|
| Process           | Ship Unloading Limestone | Unit # |  | Operating Mode |
| Control Equipment |                          |        |  | Operating Mode |

|                         |                                          |
|-------------------------|------------------------------------------|
| Describe Emission Point | Transfer Point CT-4 Trailing Conveyor SI |
|-------------------------|------------------------------------------|

|                        |       |     |                                       |       |     |
|------------------------|-------|-----|---------------------------------------|-------|-----|
| Height of Emiss. Pt.   | Start | End | Height of Emiss. Pt. Rel. to Observer | Start | End |
| Distance to Emiss. Pt. | Start | End | Direction to Emiss. Pt. (Degrees)     | Start | End |

|                                                                 |       |     |                                 |       |     |
|-----------------------------------------------------------------|-------|-----|---------------------------------|-------|-----|
| Vertical Angle to Obs. Pt.                                      | Start | End | Direction to Obs. Pt. (Degrees) | Start | End |
| Distance and Direction to Observation Point from Emission Point | Start | End |                                 |       |     |

|                    |                                                                                          |
|--------------------|------------------------------------------------------------------------------------------|
| Describe Emissions |                                                                                          |
| Start              | End                                                                                      |
| Emission Color     | Water Droplet Plume                                                                      |
| Start              | End                                                                                      |
| Attached           | <input type="checkbox"/> Detached <input type="checkbox"/> None <input type="checkbox"/> |

|                           |                |
|---------------------------|----------------|
| Describe Plume Background |                |
| Start                     | End            |
| Background Color          | Sky Conditions |
| Start                     | End            |
| Wind Speed                | Wind Direction |
| Start                     | End            |
| Ambient Temp.             | Wet Bulb Temp. |
| Start                     | End            |
|                           | RH Percent     |

|                                                         |                  |
|---------------------------------------------------------|------------------|
| Source Layout Sketch                                    | Draw North Arrow |
| <input type="checkbox"/> TN <input type="checkbox"/> MN |                  |
| X Observation Point                                     |                  |
| Observer's Position                                     |                  |
| 140°                                                    |                  |
| Sun Location Line                                       |                  |
| Longitude                                               | Latitude         |
| Declination                                             |                  |

|                        |
|------------------------|
| Additional Information |
|------------------------|

|                  |        |           |    |            |          |          |      |
|------------------|--------|-----------|----|------------|----------|----------|------|
| Observation Date | 2/6/99 | Time Zone |    | Start Time | 0935     | End Time | 1035 |
| Sec              | 0      | 15        | 30 | 45         | Comments |          |      |
| Min              |        |           |    |            |          |          |      |
| 1                | 0      | 0         | 0  | 0          |          |          |      |
| 2                | 0      | 0         | 0  | 0          |          |          |      |
| 3                | 0      | 0         | 0  | 0          |          |          |      |
| 4                | 0      | 0         | 0  | 0          |          |          |      |
| 5                | 0      | 0         | 0  | 0          |          |          |      |
| 6                | 0      | 0         | 0  | 0          |          |          |      |
| 7                | 0      | 0         | 0  | 0          |          |          |      |
| 8                | 0      | 0         | 0  | 0          |          |          |      |
| 9                | 0      | 0         | 0  | 0          |          |          |      |
| 10               | 0      | 0         | 0  | 0          |          |          |      |
| 11               | 0      | 0         | 0  | 0          |          |          |      |
| 12               | 0      | 0         | 0  | 0          |          |          |      |
| 13               | 0      | 0         | 0  | 0          |          |          |      |
| 14               | 0      | 0         | 0  | 0          |          |          |      |
| 15               | 0      | 0         | 0  | 0          |          |          |      |
| 16               | 0      | 0         | 0  | 0          |          |          |      |
| 17               | 0      | 0         | 0  | 0          |          |          |      |
| 18               | 0      | 0         | 0  | 0          |          |          |      |
| 19               | 0      | 0         | 0  | 0          |          |          |      |
| 20               | 0      | 0         | 0  | 0          |          |          |      |
| 21               | 0      | 0         | 0  | 0          |          |          |      |
| 22               | 0      | 0         | 0  | 0          |          |          |      |
| 23               | 0      | 0         | 0  | 0          |          |          |      |
| 24               | 0      | 0         | 0  | 0          |          |          |      |
| 25               | 0      | 0         | 0  | 0          |          |          |      |
| 26               | 0      | 0         | 0  | 0          |          |          |      |
| 27               | 0      | 0         | 0  | 0          |          |          |      |
| 28               | 0      | 0         | 0  | 0          |          |          |      |
| 29               | 0      | 0         | 0  | 0          |          |          |      |
| 30               | 0      | 0         | 0  | 0          |          |          |      |

|                         |                              |
|-------------------------|------------------------------|
| Observer's Name (Print) | Alvaro Castro                |
| Observer's Signature    | Alvaro Castro                |
| Date                    | 2/6/99                       |
| Organization            | St. Johns River Power Plant  |
| Certified by            | Eastern Technical Associates |
| Date                    | 12/2/98                      |

EPA

## VISIBLE EMISSION OBSERVATION FORM 1

Method Used (Circle One)  
Method 9 203A 203B Other: \_\_\_\_\_

Company Name St. Johns River Power Park.  
 Facility Name St. Johns River Power Park.  
 Street Address 11201 New Berlin Rd.  
 City Jacksonville State FL Zip 32226

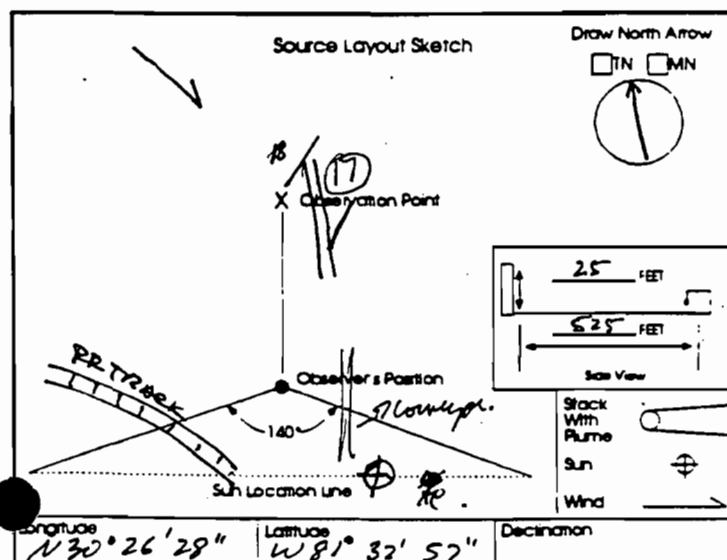
Process Ship Unloading limestone Unit # \_\_\_\_\_ Operating Mode 49% Capacity  
 Commodity/Equipment Conditioned Material Operating Mode 0% Capacity

Describe emission point  
TRAILING Conveyor S1  
 Height of Emiss. Pt. Start 25' End 25' Height of Emiss. Pt. Rel. to Observer Start 30' End 30' NE  
 Distance to Emiss. Pt. Start 160m End 160m Direction to Emiss. Pt. (Degrees) Start 8° NE End 8° NE

Vertical Angle to Obs. Pt. Start 4° End 4° Direction to Obs. Pt. (Degrees) Start 8° NE End 8° NE  
 Distance and Direction to Observation Point from Emission Point Start 5' SW End 5' SW NE

Describe Emissions  
 Start none End none  
 Emission Color Start none End none Water Droplet Plume Attached ☐ Detached ☐ None ☒

Describe Plume background  
 Start \_\_\_\_\_ End \_\_\_\_\_  
 Background Color Start Blue End Blue Sky Conditions Start Clear End Clear  
 Wind Speed Start 0-5 End 0-5 Wind Direction Start NW End NW  
 Ambient Temp Start 81°F End 84°F Wet Bulb Temp. RH Percent Start 70°F End 60% NE



Additional Information \_\_\_\_\_

Form Number 017-1 Page 1 of 2  
 Continued on VEO Form Number 017-2

| Observation Date |   | Time Zone |    |    | Start Time | End Time |
|------------------|---|-----------|----|----|------------|----------|
| 2/6/99           |   |           |    |    | 1155       | 1255     |
| Sec              | 0 | 15        | 30 | 45 | Comments   |          |
| Min              |   |           |    |    |            |          |
| 1                | 0 | 0         | 0  | 0  |            |          |
| 2                | 0 | 0         | 0  | 0  |            |          |
| 3                | 0 | 0         | 0  | 0  |            |          |
| 4                | 0 | 0         | 0  | 0  |            |          |
| 5                | 0 | 0         | 0  | 0  |            |          |
| 6                | 0 | 0         | 0  | 0  |            |          |
| 7                | 0 | 0         | 0  | 0  |            |          |
| 8                | 0 | 0         | 0  | 0  |            |          |
| 9                | 0 | 0         | 0  | 0  |            |          |
| 10               | 0 | 0         | 0  | 0  |            |          |
| 11               | 0 | 0         | 0  | 0  |            |          |
| 12               | 0 | 0         | 0  | 0  |            |          |
| 13               | 0 | 0         | 0  | 0  |            |          |
| 14               | 0 | 0         | 0  | 0  |            |          |
| 15               | 0 | 0         | 0  | 0  |            |          |
| 16               | 0 | 0         | 0  | 0  |            |          |
| 17               | 0 | 0         | 0  | 0  |            |          |
| 18               | 0 | 0         | 0  | 0  |            |          |
| 19               | 0 | 0         | 0  | 0  |            |          |
| 20               | 0 | 0         | 0  | 0  |            |          |
| 21               | 0 | 0         | 0  | 0  |            |          |
| 22               | 0 | 0         | 0  | 0  |            |          |
| 23               | 0 | 0         | 0  | 0  |            |          |
| 24               | 0 | 0         | 0  | 0  |            |          |
| 25               | 0 | 0         | 0  | 0  |            |          |
| 26               | 0 | 0         | 0  | 0  |            |          |
| 27               | 0 | 0         | 0  | 0  |            |          |
| 28               | 0 | 0         | 0  | 0  |            |          |
| 29               | 0 | 0         | 0  | 0  |            |          |
| 30               | 0 | 0         | 0  | 0  |            |          |

Observer's Name (Print) Alvaro Castro  
 Observer's Signature Alvaro Castro Date 2/6/99  
 Organization St. Johns River Power Park.  
 Certified by Eastern Technical Associates Date 12/2/98

EPA

## VISIBLE EMISSION OBSERVATION FORM 1

 Method 1 (Circle One)   
 Method 9 203A 203B Other:

 Company Name *St. Johns River Power Plant*  
 Facility Name *St. Johns River Power Plant*  
 Street Address *11201 New Berlin Rd.*  
 City *Tallahassee* State *FL* Zip *32226*

 Process *Shipping Unloading limestone* Unit #   
 Control Equipment   
 Operating Mode

 Describe Emission Point   
*TRAILING CONVEYOR S1*

 Height of Emiss. Pt.   
 Start End   
 Distance to Emiss. Pt.   
 Start End   
 Direction to Emiss. Pt. (Degrees)   
 Start End

 Vertical Angle to Obs. Pt.   
 Start End   
 Direction to Obs. Pt. (Degrees)   
 Start End   
 Distance and Direction to Observation Point from Emission Point   
 Start End

 Describe Emissions   
 Start End   
 Emission Color   
 Start End   
 Water Droplet Plume   
 Attached ☐ Detached ☐ None ☐

 Describe Plume Background   
 Start End   
 Background Color   
 Start End   
 Sky Conditions   
 Start End   
 Wind Speed   
 Start End   
 Wind Direction   
 Start End   
 Ambient Temp.   
 Start End   
 Wet Bulb Temp.   
 RH Percent

Source Layout Sketch

Draw North Arrow   
☐ TN ☐ MN

Observer's Position

Observation Point

Sun Location line

140°

FEET

Meters

Wind

Longitude Latitude Declination

Additional Information

 Form Number *017-2* Page *2* of *2*  
 Continued on VEO Form Number *017-1*

| Observation Date |   | Time Zone |    |    | Start Time | End Time |
|------------------|---|-----------|----|----|------------|----------|
| 2/6/99           |   |           |    |    | 1155       | 1255     |
| Sec<br>Min       | 0 | 15        | 30 | 45 | Comments   |          |
| 1                | 0 | 0         | 0  | 0  |            |          |
| 2                | 0 | 0         | 0  | 0  |            |          |
| 3                | 0 | 0         | 0  | 0  |            |          |
| 4                | 0 | 0         | 0  | 0  |            |          |
| 5                | 0 | 0         | 0  | 0  |            |          |
| 6                | 0 | 0         | 0  | 0  |            |          |
| 7                | 0 | 0         | 0  | 0  |            |          |
| 8                | 0 | 0         | 0  | 0  |            |          |
| 9                | 0 | 0         | 0  | 0  |            |          |
| 10               | 0 | 0         | 0  | 0  |            |          |
| 11               | 0 | 0         | 0  | 0  |            |          |
| 12               | 0 | 0         | 0  | 0  |            |          |
| 13               | 0 | 0         | 0  | 0  |            |          |
| 14               | 0 | 0         | 0  | 0  |            |          |
| 15               | 0 | 0         | 0  | 0  |            |          |
| 16               | 0 | 0         | 0  | 0  |            |          |
| 17               | 0 | 0         | 0  | 0  |            |          |
| 18               | 0 | 0         | 0  | 0  |            |          |
| 19               | 0 | 0         | 0  | 0  |            |          |
| 20               | 0 | 0         | 0  | 0  |            |          |
| 21               | 0 | 0         | 0  | 0  |            |          |
| 22               | 0 | 0         | 0  | 0  |            |          |
| 23               | 0 | 0         | 0  | 0  |            |          |
| 24               | 0 | 0         | 0  | 0  |            |          |
| 25               | 0 | 0         | 0  | 0  |            |          |
| 26               | 0 | 0         | 0  | 0  |            |          |
| 27               | 0 | 0         | 0  | 0  |            |          |
| 28               | 0 | 0         | 0  | 0  |            |          |
| 29               | 0 | 0         | 0  | 0  |            |          |
| 30               | 0 | 0         | 0  | 0  |            |          |

 Observer's Name (Print) *Alvaro Castro*  
 Observer's Signature *Alvaro Castro* Date *2/6/99*  
 Organization *St. Johns River Power Plant*  
 Certified by *Eastern Technical Associates* Date *12/2/98*

# VISIBLE EMISSION OBSERVATION FORM 1

|                              |       |      |        |
|------------------------------|-------|------|--------|
| Form Number                  | 018-1 | Page | 1 of 2 |
| Continued on VEO Form Number |       |      | 018-2  |

Method Used (Circle One)

| Method     | 2003A | 2003B | Other |
|------------|-------|-------|-------|
| Method 9   |       |       |       |
| Method 10  |       |       |       |
| Method 11  |       |       |       |
| Method 12  |       |       |       |
| Method 13  |       |       |       |
| Method 14  |       |       |       |
| Method 15  |       |       |       |
| Method 16  |       |       |       |
| Method 17  |       |       |       |
| Method 18  |       |       |       |
| Method 19  |       |       |       |
| Method 20  |       |       |       |
| Method 21  |       |       |       |
| Method 22  |       |       |       |
| Method 23  |       |       |       |
| Method 24  |       |       |       |
| Method 25  |       |       |       |
| Method 26  |       |       |       |
| Method 27  |       |       |       |
| Method 28  |       |       |       |
| Method 29  |       |       |       |
| Method 30  |       |       |       |
| Method 31  |       |       |       |
| Method 32  |       |       |       |
| Method 33  |       |       |       |
| Method 34  |       |       |       |
| Method 35  |       |       |       |
| Method 36  |       |       |       |
| Method 37  |       |       |       |
| Method 38  |       |       |       |
| Method 39  |       |       |       |
| Method 40  |       |       |       |
| Method 41  |       |       |       |
| Method 42  |       |       |       |
| Method 43  |       |       |       |
| Method 44  |       |       |       |
| Method 45  |       |       |       |
| Method 46  |       |       |       |
| Method 47  |       |       |       |
| Method 48  |       |       |       |
| Method 49  |       |       |       |
| Method 50  |       |       |       |
| Method 51  |       |       |       |
| Method 52  |       |       |       |
| Method 53  |       |       |       |
| Method 54  |       |       |       |
| Method 55  |       |       |       |
| Method 56  |       |       |       |
| Method 57  |       |       |       |
| Method 58  |       |       |       |
| Method 59  |       |       |       |
| Method 60  |       |       |       |
| Method 61  |       |       |       |
| Method 62  |       |       |       |
| Method 63  |       |       |       |
| Method 64  |       |       |       |
| Method 65  |       |       |       |
| Method 66  |       |       |       |
| Method 67  |       |       |       |
| Method 68  |       |       |       |
| Method 69  |       |       |       |
| Method 70  |       |       |       |
| Method 71  |       |       |       |
| Method 72  |       |       |       |
| Method 73  |       |       |       |
| Method 74  |       |       |       |
| Method 75  |       |       |       |
| Method 76  |       |       |       |
| Method 77  |       |       |       |
| Method 78  |       |       |       |
| Method 79  |       |       |       |
| Method 80  |       |       |       |
| Method 81  |       |       |       |
| Method 82  |       |       |       |
| Method 83  |       |       |       |
| Method 84  |       |       |       |
| Method 85  |       |       |       |
| Method 86  |       |       |       |
| Method 87  |       |       |       |
| Method 88  |       |       |       |
| Method 89  |       |       |       |
| Method 90  |       |       |       |
| Method 91  |       |       |       |
| Method 92  |       |       |       |
| Method 93  |       |       |       |
| Method 94  |       |       |       |
| Method 95  |       |       |       |
| Method 96  |       |       |       |
| Method 97  |       |       |       |
| Method 98  |       |       |       |
| Method 99  |       |       |       |
| Method 100 |       |       |       |

|                            |       |       |
|----------------------------|-------|-------|
| Company Name               |       |       |
| St. Johns River Power Park |       |       |
| Facility Name              |       |       |
| St. Johns River Power Park |       |       |
| Street Address             |       |       |
| 11201 New Berlin Rd.       |       |       |
| City                       | State | Zip   |
| Tacksonville               | FL    | 32226 |

|                                           |        |                                |
|-------------------------------------------|--------|--------------------------------|
| Process<br>Ship Unloading limestone       | Unit # | Operating Mode<br>49% Capacity |
| Control Equipment<br>Conditioned Material |        | Operating Mode<br>0% Capacity  |

|                                      |          |                                       |            |
|--------------------------------------|----------|---------------------------------------|------------|
| Describe Emission Point              |          |                                       |            |
| TRANSFER POINT: TRAILING CONVEYOR S1 |          |                                       |            |
| To Boom Conveyor S2                  |          |                                       |            |
| Height of Emiss. Pt.                 |          | Height of Emiss. Pt. Rel. to Observer |            |
| Start 20'                            | End 20'  | Start 25'                             | End 25'    |
| Distance to Emiss. Pt.               |          | Direction to Emiss. Pt. (Degrees)     |            |
| Start 175m                           | End 175m | Start 80° NE                          | End 80° NE |

|                                                                 |                                 |
|-----------------------------------------------------------------|---------------------------------|
| Vertical Angle to Obs. Pt.                                      | Direction to Obs. Pt. (Degrees) |
| Start 3° End 3°                                                 | Start 8° NE End 8° NE           |
| Distance and Direction to Observation Point from Emission Point |                                 |
| Start 10' SW                                                    | End 10' SW NE                   |

|                                   |      |                                                                            |      |      |
|-----------------------------------|------|----------------------------------------------------------------------------|------|------|
| Escalator Emissions               |      |                                                                            |      |      |
| Start                             | none |                                                                            | End  | none |
| Emission Color                    |      | Water Droplet Plume                                                        |      |      |
| Start                             | none | End                                                                        | none |      |
| Attached <input type="checkbox"/> |      | Detached <input type="checkbox"/> None <input checked="" type="checkbox"/> |      |      |

|                          |                  |                    |                  |
|--------------------------|------------------|--------------------|------------------|
| Describe Pume Background |                  |                    |                  |
| Start                    |                  | End                |                  |
| Background Color         |                  | Sky Conditions     |                  |
| Start <i>Blue</i>        | End <i>Pale</i>  | Start <i>Clear</i> | End <i>Clear</i> |
| Wind Speed               |                  | Wind Direction     |                  |
| Start <i>0-5</i>         | End <i>0-5</i>   | Start <i>NW</i>    | End <i>NW</i>    |
| Ambient Temp             |                  | Wet Bulb Temp      | Rel Percent      |
| Start <i>81° F</i>       | End <i>84° F</i> | <i>70° F</i>       | <i>60%</i>       |

Source Layout Sketch

Drain North Arrow

☐ TN ☐ MN

X Observation Point

Observer's Position

140°

Sun Location Line

RT TRACK

Stack With Plume

Sun

Wind

Longitude  $N 30^{\circ} 26' 28''$  Latitude  $W 81^{\circ} 32' 57''$  Declination

|                        |
|------------------------|
| Additional information |
|                        |

| Observation Date |   | Time Zone |    |    |          | Start Time | End Time |
|------------------|---|-----------|----|----|----------|------------|----------|
| 2/6/99           |   |           |    |    |          | 1155       | 1255     |
| Sec<br>Min       | 0 | 15        | 30 | 45 | Comments |            |          |
| 1                | 0 | 0         | 0  | 0  |          |            |          |
| 2                | 0 | 0         | 0  | 0  |          |            |          |
| 3                | 0 | 0         | 0  | 0  |          |            |          |
| 4                | 0 | 0         | 0  | 0  |          |            |          |
| 5                | 0 | 0         | 0  | 0  |          |            |          |
| 6                | 0 | 0         | 0  | 0  |          |            |          |
| 7                | 0 | 0         | 0  | 0  |          |            |          |
| 8                | 0 | 0         | 0  | 0  |          |            |          |
| 9                | 0 | 0         | 0  | 0  |          |            |          |
| 10               | 0 | 0         | 0  | 0  |          |            |          |
| 11               | 0 | 0         | 0  | 0  |          |            |          |
| 12               | 0 | 0         | 0  | 0  |          |            |          |
| 13               | 0 | 0         | 0  | 0  |          |            |          |
| 14               | 0 | 0         | 0  | 0  |          |            |          |
| 15               | 0 | 0         | 0  | 0  |          |            |          |
| 16               | 0 | 0         | 0  | 0  |          |            |          |
| 17               | 0 | 0         | 0  | 0  |          |            |          |
| 18               | 0 | 0         | 0  | 0  |          |            |          |
| 19               | 0 | 0         | 0  | 0  |          |            |          |
| 20               | 0 | 0         | 0  | 0  |          |            |          |
| 21               | 0 | 0         | 0  | 0  |          |            |          |
| 22               | 0 | 0         | 0  | 0  |          |            |          |
| 23               | 0 | 0         | 0  | 0  |          |            |          |
| 24               | 0 | 0         | 0  | 0  |          |            |          |
| 25               | 0 | 0         | 0  | 0  |          |            |          |
| 26               | 0 | 0         | 0  | 0  |          |            |          |
| 27               | 0 | 0         | 0  | 0  |          |            |          |
| 28               | 0 | 0         | 0  | 0  |          |            |          |
| 29               | 0 | 0         | 0  | 0  |          |            |          |
| 30               | 0 | 0         | 0  | 0  |          |            |          |

|                         |                             |              |
|-------------------------|-----------------------------|--------------|
| Observer's Name (Print) | Alvaro Castro               |              |
| Observer's Signature    | Alvaro Castro               | Date 2/6/99  |
| Organization            | St. Johns River Power Park. |              |
| Created by              | Ernest Technical Associates | Date 12/2/98 |

EPA

## VISIBLE EMISSION OBSERVATION FORM 1

Method Used (Circle One) Method 9 203A 203B Other: \_\_\_\_\_

Company Name St. Johns River Power Park.  
 Facility Name St. Johns River Power Park.  
 Street Address 11201 New Berlin Rd.  
 City Jacksonville State FL Zip 32226

Process Ship Unloading limestone Unit # \_\_\_\_\_ Operating Mode \_\_\_\_\_  
 Control Equipment \_\_\_\_\_ Operating Mode \_\_\_\_\_

Describe Emission Point  
TRANSFER POINT: TRAILING CONVEYOR S1  
TO BOOM CONVEYOR S2  
 Height of Emiss. Pt. \_\_\_\_\_ Height of Emiss. Pt. Rel. to Observer \_\_\_\_\_  
 Start \_\_\_\_\_ End \_\_\_\_\_ Start \_\_\_\_\_ End \_\_\_\_\_  
 Distance to Emiss. Pt. \_\_\_\_\_ Direction to Emiss. Pt. (Degrees) \_\_\_\_\_  
 Start \_\_\_\_\_ End \_\_\_\_\_ Start \_\_\_\_\_ End \_\_\_\_\_

Vertical Angle to Obs. Pt. \_\_\_\_\_ Direction to Obs. Pt. (Degrees) \_\_\_\_\_  
 Start \_\_\_\_\_ End \_\_\_\_\_ Start \_\_\_\_\_ End \_\_\_\_\_  
 Distance and Direction to Observation Point from Emission Point  
 Start \_\_\_\_\_ End \_\_\_\_\_

Describe Emissions  
 Start \_\_\_\_\_ End \_\_\_\_\_  
 Emission Color \_\_\_\_\_ Water Droplet Plume \_\_\_\_\_  
 Start \_\_\_\_\_ End \_\_\_\_\_ Attached ☐ Detached ☐ None ☒

Describe Plume Background  
 Start \_\_\_\_\_ End \_\_\_\_\_  
 Background Color \_\_\_\_\_ Sky Conditions \_\_\_\_\_  
 Start \_\_\_\_\_ End \_\_\_\_\_ Start \_\_\_\_\_ End \_\_\_\_\_  
 Wind Speed \_\_\_\_\_ Wind Direction \_\_\_\_\_  
 Start \_\_\_\_\_ End \_\_\_\_\_ Start \_\_\_\_\_ End \_\_\_\_\_  
 Ambient Temp. \_\_\_\_\_ Wet Bulb Temp. \_\_\_\_\_ RH Percent \_\_\_\_\_  
 Start \_\_\_\_\_ End \_\_\_\_\_

Source Layout Sketch

Draw North Arrow  
☐ TN ☐ MN

Observer's Position

Observation Point

Sun Location Line

140°

0 100 FEET

Side View

Stack With Plume

Sun

Wind

Longitude \_\_\_\_\_ Latitude \_\_\_\_\_ Declination \_\_\_\_\_

Additional Information \_\_\_\_\_  
 \_\_\_\_\_  
 \_\_\_\_\_

Form Number 018-2 Page 2 of 2  
 Continued on VEO Form Number 018-1

| Observation Date |   | Time Zone |    |    |          | Start Time  | End Time    |
|------------------|---|-----------|----|----|----------|-------------|-------------|
| <u>2/6/99</u>    |   |           |    |    |          | <u>1155</u> | <u>1255</u> |
| Sec              | 0 | 15        | 30 | 45 | Comments |             |             |
| Mn               |   |           |    |    |          |             |             |
| 1                | 0 | 0         | 0  | 0  |          |             |             |
| 2                | 0 | 0         | 0  | 0  |          |             |             |
| 3                | 0 | 0         | 0  | 0  |          |             |             |
| 4                | 0 | 0         | 0  | 0  |          |             |             |
| 5                | 0 | 0         | 0  | 0  |          |             |             |
| 6                | 0 | 0         | 0  | 0  |          |             |             |
| 7                | 0 | 0         | 0  | 0  |          |             |             |
| 8                | 0 | 0         | 0  | 0  |          |             |             |
| 9                | 0 | 0         | 0  | 0  |          |             |             |
| 10               | 0 | 0         | 0  | 0  |          |             |             |
| 11               | 0 | 0         | 0  | 0  |          |             |             |
| 12               | 0 | 0         | 0  | 0  |          |             |             |
| 13               | 0 | 0         | 0  | 0  |          |             |             |
| 14               | 0 | 0         | 0  | 0  |          |             |             |
| 15               | 0 | 0         | 0  | 0  |          |             |             |
| 16               | 0 | 0         | 0  | 0  |          |             |             |
| 17               | 0 | 0         | 0  | 0  |          |             |             |
| 18               | 0 | 0         | 0  | 0  |          |             |             |
| 19               | 0 | 0         | 0  | 0  |          |             |             |
| 20               | 0 | 0         | 0  | 0  |          |             |             |
| 21               | 0 | 0         | 0  | 0  |          |             |             |
| 22               | 0 | 0         | 0  | 0  |          |             |             |
| 23               | 0 | 0         | 0  | 0  |          |             |             |
| 24               | 0 | 0         | 0  | 0  |          |             |             |
| 25               | 0 | 0         | 0  | 0  |          |             |             |
| 26               | 0 | 0         | 0  | 0  |          |             |             |
| 27               | 0 | 0         | 0  | 0  |          |             |             |
| 28               | 0 | 0         | 0  | 0  |          |             |             |
| 29               | 0 | 0         | 0  | 0  |          |             |             |
| 30               | 0 | 0         | 0  | 0  |          |             |             |

Observer's Name (Print) Alvaro Castro  
 Observer's Signature Alvaro Castro Date 2/6/99  
 Organization St. Johns River Power Park.  
 Certified by Eastern Technical Associates Date 12/2/98

EPA

## VISIBLE EMISSION OBSERVATION FORM 1

Method Used (Circle One) Method 9 203A 203B Other: \_\_\_\_\_

Company Name St. Johns River Power Park  
 Facility Name St. Johns River Power Park  
 Street Address 11201 New Berlin Rd.  
 City Jacksonville State FL Zip 32226

Process Ship Unloading limestone Unit # \_\_\_\_\_ Operating Mode 49% Capacity  
 Control Equipment Conditioned Material Operating Mode 0% Capacity

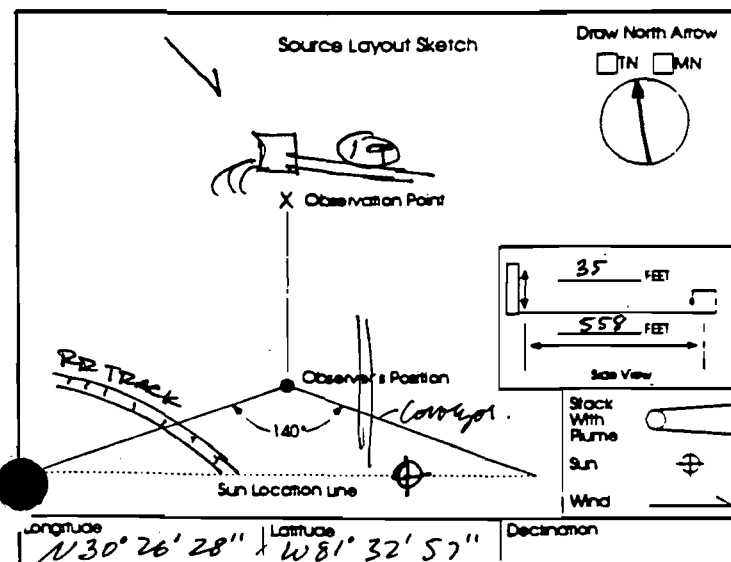
Describe Emission Point  
Boom Conveyor S2

Height of Emiss. Pt. Start 35' End 35' Height of Emiss. Pt. Rel. to Observer Start 40' End 40'  
 Distance to Emiss. Pt. Start 170m End 170m Direction to Emiss. Pt. (Degrees) Start 5° NE End 5° NE

Vertical Angle to Obs. Pt. Start 4° End 4° Direction to Obs. Pt. (Degrees) Start 5° NE End 5° NE  
 Distance and Direction to Observation Point from Emission Point Start 10' SW End 10' SW NE

Describe Emissions  
 Start none End none  
 Emission Color Start none End none Water Droplet Plume Attached ☐ Detached ☐ None ☒

Describe Plume Background  
 Start \_\_\_\_\_ End \_\_\_\_\_  
 Background Color Start Blue End Blue Sky Conditions Start Clear End Clear  
 Wind Speed Start 0-5 End 0-5 Wind Direction Start NW End NW  
 Ambient Temp. Start 81° End 81° Wet Bulb Temp. 70° RH Percent 60%



Form Number 019-1 Page 1 of 2  
 Continued on VEO Form Number 019-2

| Observation Date <u>2/6/99</u> |     |   |    |    | Time Zone | Start Time <u>11:55</u> | End Time <u>12:55</u> |
|--------------------------------|-----|---|----|----|-----------|-------------------------|-----------------------|
| Min                            | Sec | 0 | 15 | 30 | 45        | Comments                | HE                    |
| 1                              | 0   | 0 | 0  | 0  | 0         |                         |                       |
| 2                              | 0   | 0 | 0  | 0  | 0         |                         |                       |
| 3                              | 0   | 0 | 0  | 0  | 0         |                         |                       |
| 4                              | 0   | 0 | 0  | 0  | 0         |                         |                       |
| 5                              | 0   | 0 | 0  | 0  | 0         |                         |                       |
| 6                              | 0   | 0 | 0  | 0  | 0         |                         |                       |
| 7                              | 0   | 0 | 0  | 0  | 0         |                         |                       |
| 8                              | 0   | 0 | 0  | 0  | 0         |                         |                       |
| 9                              | 0   | 0 | 0  | 0  | 0         |                         |                       |
| 10                             | 0   | 0 | 0  | 0  | 0         |                         |                       |
| 11                             | 0   | 0 | 0  | 0  | 0         |                         |                       |
| 12                             | 0   | 0 | 0  | 0  | 0         |                         |                       |
| 13                             | 0   | 0 | 0  | 0  | 0         |                         |                       |
| 14                             | 0   | 0 | 0  | 0  | 0         |                         |                       |
| 15                             | 0   | 0 | 0  | 0  | 0         |                         |                       |
| 16                             | 0   | 0 | 0  | 0  | 0         |                         |                       |
| 17                             | 0   | 0 | 0  | 0  | 0         |                         |                       |
| 18                             | 0   | 0 | 0  | 0  | 0         |                         |                       |
| 19                             | 0   | 0 | 0  | 0  | 0         |                         |                       |
| 20                             | 0   | 0 | 0  | 0  | 0         |                         |                       |
| 21                             | 0   | 0 | 0  | 0  | 0         |                         |                       |
| 22                             | 0   | 0 | 0  | 0  | 0         |                         |                       |
| 23                             | 0   | 0 | 0  | 0  | 0         |                         |                       |
| 24                             | 0   | 0 | 0  | 0  | 0         |                         |                       |
| 25                             | 0   | 0 | 0  | 0  | 0         |                         |                       |
| 26                             | 0   | 0 | 0  | 0  | 0         |                         |                       |
| 27                             | 0   | 0 | 0  | 0  | 0         |                         |                       |
| 28                             | 0   | 0 | 0  | 0  | 0         |                         |                       |
| 29                             | 0   | 0 | 0  | 0  | 0         |                         |                       |
| 30                             | 0   | 0 | 0  | 0  | 0         |                         |                       |

Observer's Name (Print) Alvaro Castro  
 Observer's Signature Alvaro Castro Date 2/6/99  
 Organization St. Johns River Power Park  
 Checked by Wesley Technical Associates Date 12/2/98

EPA

## VISIBLE EMISSION OBSERVATION FORM 1

Method Used (Circle One)  
Method 9 203A 203B Other: \_\_\_\_\_

Company Name: St. Johns River Power Park.  
 Facility Name: St. Johns River Power Park.  
 Street Address: 11201 New Berlin Rd.  
 City: Jacksonville State: FL Zip: 32226

Process: Ship Unloading limestone Unit #: \_\_\_\_\_ Operating Mode: \_\_\_\_\_  
 Control Equipment: \_\_\_\_\_ Operating Mode: \_\_\_\_\_

Describe Emission Point:  
Broom Conveyor S2  
 Height of Emiss. Pt. \_\_\_\_\_ Height of Emiss. Pt. Rel. to Observer \_\_\_\_\_  
 Start \_\_\_\_\_ End \_\_\_\_\_ Start \_\_\_\_\_ End \_\_\_\_\_  
 Distance to Emiss. Pt. \_\_\_\_\_ Direction to Emiss. Pt. (Degrees) \_\_\_\_\_  
 Start \_\_\_\_\_ End \_\_\_\_\_ Start \_\_\_\_\_ End \_\_\_\_\_

Vertical Angle to Obs. Pt. \_\_\_\_\_ Direction to Obs. Pt. (Degrees) \_\_\_\_\_  
 Start \_\_\_\_\_ End \_\_\_\_\_ Start \_\_\_\_\_ End \_\_\_\_\_  
 Distance and Direction to Observation Point from Emission Point \_\_\_\_\_  
 Start \_\_\_\_\_ End \_\_\_\_\_

Describe Emissions  
 Start \_\_\_\_\_ End \_\_\_\_\_  
 Emission Color \_\_\_\_\_ Water Droplet Plume \_\_\_\_\_  
 Start \_\_\_\_\_ End \_\_\_\_\_ Attached ☐ Detached ☐ None ☐

Describe Plume Background  
 Start \_\_\_\_\_ End \_\_\_\_\_  
 Background Color \_\_\_\_\_ Sky Conditions \_\_\_\_\_  
 Start \_\_\_\_\_ End \_\_\_\_\_ Start \_\_\_\_\_ End \_\_\_\_\_  
 Wind Speed \_\_\_\_\_ Wind Direction \_\_\_\_\_  
 Start \_\_\_\_\_ End \_\_\_\_\_ Start \_\_\_\_\_ End \_\_\_\_\_  
 Ambient Temp. \_\_\_\_\_ Wet Bulb Temp. \_\_\_\_\_ RH Percent \_\_\_\_\_  
 Start \_\_\_\_\_ End \_\_\_\_\_

Source Layout Sketch

Draw North Arrow  
☐ TN ☐ MN

Observer's Position

140°

Sun Location Line

Scale View

Stack With Plume

Sun

Wind

Longitude \_\_\_\_\_ Latitude \_\_\_\_\_ Declination \_\_\_\_\_

Additional Information

Form Number 019-2 Page 2 of 2  
 Continued on VEO Form Number 019-1

| Observation Date |   | Time Zone |    |    | Start Time | End Time |
|------------------|---|-----------|----|----|------------|----------|
| 2/6/99           |   |           |    |    | 1155       | 1255     |
| Sec<br>Min       | 0 | 15        | 30 | 45 | Comments   |          |
| 1                | 0 | 0         | 0  | 0  |            |          |
| 2                | 0 | 0         | 0  | 0  |            |          |
| 3                | 0 | 0         | 0  | 0  |            |          |
| 4                | 0 | 0         | 0  | 0  |            |          |
| 5                | 0 | 0         | 0  | 0  |            |          |
| 6                | 0 | 0         | 0  | 0  |            |          |
| 7                | 0 | 0         | 0  | 0  |            |          |
| 8                | 0 | 0         | 0  | 0  |            |          |
| 9                | 0 | 0         | 0  | 0  |            |          |
| 10               | 0 | 0         | 0  | 0  |            |          |
| 11               | 0 | 0         | 0  | 0  |            |          |
| 12               | 0 | 0         | 0  | 0  |            |          |
| 13               | 0 | 0         | 0  | 0  |            |          |
| 14               | 0 | 0         | 0  | 0  |            |          |
| 15               | 0 | 0         | 0  | 0  |            |          |
| 16               | 0 | 0         | 0  | 0  |            |          |
| 17               | 0 | 0         | 0  | 0  |            |          |
| 18               | 0 | 0         | 0  | 0  |            |          |
| 19               | 0 | 0         | 0  | 0  |            |          |
| 20               | 0 | 0         | 0  | 0  |            |          |
| 21               | 0 | 0         | 0  | 0  |            |          |
| 22               | 0 | 0         | 0  | 0  |            |          |
| 23               | 0 | 0         | 0  | 0  |            |          |
| 24               | 0 | 0         | 0  | 0  |            |          |
| 25               | 0 | 0         | 0  | 0  |            |          |
| 26               | 0 | 0         | 0  | 0  |            |          |
| 27               | 0 | 0         | 0  | 0  |            |          |
| 28               | 0 | 0         | 0  | 0  |            |          |
| 29               | 0 | 0         | 0  | 0  |            |          |
| 30               | 0 | 0         | 0  | 0  |            |          |

Observer's Name (Print) Alvaro Castro  
 Observer's Signature Alvaro Castro Date 2/6/99  
 Organization St. Johns River Power Park.  
 Compiled By Eastern Technical Associates Date 12/2/98



# VISIBLE EMISSION OBSERVATION FORM 1

Form Number 020-1 Page 1 of 2  
Continued on VEO Form Number 020-2

Method Used (Circle One)  
☒ Method 9      203A      203B      Other: \_\_\_\_\_

Company Name *St. Johns River Power Park.*  
Facility Name *St. Johns River Power Park.*  
Street Address *11201 New Berlin Rd.*  
City *Jacksonville* State *FL* Zip *32026*

|                             |        |                |
|-----------------------------|--------|----------------|
| Process                     | Unit # | Operating Mode |
| Ship Unloading limestone    |        | 49% Capacity   |
| Control Equipment           | Water  | Operating Mode |
| Conditioned Material spread |        | 0% Capacity    |

|                                                                  |          |                                       |            |
|------------------------------------------------------------------|----------|---------------------------------------|------------|
| Describe Emission Point                                          |          |                                       |            |
| TRANSFER POINT: Boom Conveyor S2 to<br>Storage Piles B + C, CT-4 |          |                                       |            |
| Height of Emiss. Pt.                                             |          | Height of Emiss. Pt. Rel. to Observer |            |
| Start 40'                                                        | End 40'  | Start 45'                             | End 45'    |
| Distance to Emiss. Pt.                                           |          | Direction to Emiss. Pt. (Degrees)     |            |
| Start 170m                                                       | End 170m | Start 3° NE                           | End 3° NE. |

|                                                                 |                                 |
|-----------------------------------------------------------------|---------------------------------|
| Vertical Angle to Obs. Pt.                                      | Direction to Obs. Pt. (Degrees) |
| Start 5° End 5°                                                 | Start 3° NE End 3° NE           |
| Distance and Direction to Observation Point from Emission Point |                                 |
| Start 10'S                                                      | End 10'S                        |

|                |                          |                                                                            |
|----------------|--------------------------|----------------------------------------------------------------------------|
| Acid Emissions |                          |                                                                            |
| Start          | none                     |                                                                            |
| Emission Color | Water Droplet Plume      |                                                                            |
| Start          | none                     | End none                                                                   |
| Attached       | <input type="checkbox"/> | Detached <input type="checkbox"/> None <input checked="" type="checkbox"/> |

|                        |      |                |       |
|------------------------|------|----------------|-------|
| Decade Pume background |      |                |       |
| Start                  |      | End            |       |
| Background Color       |      | Sky Conditions |       |
| Start                  | Blue | End            | Clear |
| Wind Speed             |      | Wind Direction |       |
| Start                  | 0-5  | End            | NW    |
| Ambient Temp.          |      | Wet Bulb Temp. |       |
| Start                  | 81°F | End            | 84°F  |
|                        |      | RH Percent     |       |
|                        |      | 70%            |       |
|                        |      | 60%            |       |

Source Layout Sketch

Draw North Arrow

☐ TN ☐ MN

20

19

X Observation Point

RR TRACK

Observer's Position

140°

Countryside

Sun Location Line

Stack With Plume

Sun

Wind

Size View

40 FEET

55 FEET

Longitude N 30° 26' 28"

Latitude W 81° 32' 57"

Declination

|                        |
|------------------------|
| Additional information |
|                        |

| Observation Date<br>2/6/99 |   | Time Zone |    |    |          | Start Time<br>11 55 | End Time<br>12 55 |
|----------------------------|---|-----------|----|----|----------|---------------------|-------------------|
| Sec<br>Min                 | 0 | 15        | 30 | 45 | Comments |                     |                   |
| 1                          | 0 | 0         | 0  | 0  |          |                     |                   |
| 2                          | 0 | 0         | 0  | 0  |          |                     |                   |
| 3                          | 0 | 0         | 0  | 0  |          |                     |                   |
| 4                          | 0 | 0         | 0  | 0  |          |                     |                   |
| 5                          | 0 | 0         | 0  | 0  |          |                     |                   |
| 6                          | 0 | 0         | 0  | 0  |          |                     |                   |
| 7                          | 0 | 0         | 0  | 0  |          |                     |                   |
| 8                          | 0 | 0         | 0  | 0  |          |                     |                   |
| 9                          | 0 | 0         | 0  | 0  |          |                     |                   |
| 10                         | 0 | 0         | 0  | 0  |          |                     |                   |
| 11                         | 0 | 0         | 0  | 0  |          |                     |                   |
| 12                         | 0 | 0         | 0  | 0  |          |                     |                   |
| 13                         | 0 | 0         | 0  | 0  |          |                     |                   |
| 14                         | 0 | 0         | 0  | 0  |          |                     |                   |
| 15                         | 0 | 0         | 0  | 0  |          |                     |                   |
| 16                         | 0 | 0         | 0  | 0  |          |                     |                   |
| 17                         | 0 | 0         | 0  | 0  |          |                     |                   |
| 18                         | 0 | 0         | 0  | 0  |          |                     |                   |
| 19                         | 0 | 0         | 0  | 0  |          |                     |                   |
| 20                         | 0 | 0         | 0  | 0  |          |                     |                   |
| 21                         | 0 | 0         | 0  | 0  |          |                     |                   |
| 22                         | 0 | 0         | 0  | 0  |          |                     |                   |
| 23                         | 0 | 0         | 0  | 0  |          |                     |                   |
| 24                         | 0 | 0         | 0  | 0  |          |                     |                   |
| 25                         | 0 | 0         | 0  | 0  |          |                     |                   |
| 26                         | 0 | 0         | 0  | 0  |          |                     |                   |
| 27                         | 0 | 0         | 0  | 0  |          |                     |                   |
| 28                         | 0 | 0         | 0  | 0  |          |                     |                   |
| 29                         | 0 | 0         | 0  | 0  |          |                     |                   |
| 30                         | 0 | 0         | 0  | 0  |          |                     |                   |

|                         |      |
|-------------------------|------|
| Observer's Name (Print) |      |
| Observer Signature      | Date |
| Organization            |      |
| Checked by              | Date |

EPA

## VISIBLE EMISSION OBSERVATION FORM 1

Method Used (Circle One) Method 9 203A 203B Other: \_\_\_\_\_

Company Name St. Johns River Power Park  
 Facility Name St. Johns River Power Park  
 Street Address 11201 New Berlin Rd.  
 City Jacksonville State FL Zip 32226

Process Ship Unloading Limestone Unit # \_\_\_\_\_ Operating Mode \_\_\_\_\_  
 Control Equipment \_\_\_\_\_ Operating Mode \_\_\_\_\_

Describe Emission Point TRANSFER POINT: Boom Conveyor S2 to STORAGE Piles B+C, CT 4  
 Height of Emiss. Pt. \_\_\_\_\_ Height of Emiss. Pt. Rel. to Observer \_\_\_\_\_  
 Start \_\_\_\_\_ End \_\_\_\_\_ Start \_\_\_\_\_ End \_\_\_\_\_  
 Distance to Emiss. Pt. \_\_\_\_\_ Direction to Emiss. Pt. (Degrees) \_\_\_\_\_  
 Start \_\_\_\_\_ End \_\_\_\_\_ Start \_\_\_\_\_ End \_\_\_\_\_

Vertical Angle to Obs. Pt. \_\_\_\_\_ Direction to Obs. Pt. (Degrees) \_\_\_\_\_  
 Start \_\_\_\_\_ End \_\_\_\_\_ Start \_\_\_\_\_ End \_\_\_\_\_  
 Distance and Direction to Observation Point from Emission Point \_\_\_\_\_  
 ft \_\_\_\_\_ End \_\_\_\_\_

Describe Emissions  
 Start \_\_\_\_\_ End \_\_\_\_\_  
 Emission Color \_\_\_\_\_ Water Droplet Plume \_\_\_\_\_  
 Start \_\_\_\_\_ End \_\_\_\_\_ Attached ☐ Detached ☐ None ☐

Describe Plume Background  
 Start \_\_\_\_\_ End \_\_\_\_\_  
 Background Color \_\_\_\_\_ Sky Conditions \_\_\_\_\_  
 Start \_\_\_\_\_ End \_\_\_\_\_ Start \_\_\_\_\_ End \_\_\_\_\_  
 Wind Speed \_\_\_\_\_ Wind Direction \_\_\_\_\_  
 Start \_\_\_\_\_ End \_\_\_\_\_ Start \_\_\_\_\_ End \_\_\_\_\_  
 Ambient Temp. \_\_\_\_\_ Wet Bulb Temp. \_\_\_\_\_ RH Percent \_\_\_\_\_  
 Start \_\_\_\_\_ End \_\_\_\_\_

Source Layout Sketch

Draw North Arrow ☐ TN ☐ MN

Observer's Position

Observation Point

Sun Location Line

140°

FEET

FEET

Scale View

Stack With Plume

Sun

Wind

Longitude \_\_\_\_\_ Latitude \_\_\_\_\_ Declination \_\_\_\_\_

Additional Information \_\_\_\_\_

Form Number 020-2 Page 2 of 2  
 Continued on VEO Form Number 020-1

| Observation Date |     | Time Zone |    |    |    | Start Time  | End Time    |
|------------------|-----|-----------|----|----|----|-------------|-------------|
| <u>2/6/99</u>    |     |           |    |    |    | <u>1155</u> | <u>1255</u> |
| Sec              | Min | 0         | 15 | 30 | 45 | Comments    |             |
| 1                |     | 0         | 0  | 0  | 0  |             |             |
| 2                |     | 0         | 0  | 0  | 0  |             |             |
| 3                |     | 0         | 0  | 0  | 0  |             |             |
| 4                |     | 0         | 0  | 0  | 0  |             |             |
| 5                |     | 0         | 0  | 0  | 0  |             |             |
| 6                |     | 0         | 0  | 0  | 0  |             |             |
| 7                |     | 0         | 0  | 0  | 0  |             |             |
| 8                |     | 0         | 0  | 0  | 0  |             |             |
| 9                |     | 0         | 0  | 0  | 0  |             |             |
| 10               |     | 0         | 0  | 0  | 0  |             |             |
| 11               |     | 0         | 0  | 0  | 0  |             |             |
| 12               |     | 0         | 0  | 0  | 0  |             |             |
| 13               |     | 0         | 0  | 0  | 0  |             |             |
| 14               |     | 0         | 0  | 0  | 0  |             |             |
| 15               |     | 0         | 0  | 0  | 0  |             |             |
| 16               |     | 0         | 0  | 0  | 0  |             |             |
| 17               |     | 0         | 0  | 0  | 0  |             |             |
| 18               |     | 0         | 0  | 0  | 0  |             |             |
| 19               |     | 0         | 0  | 0  | 0  |             |             |
| 20               |     | 0         | 0  | 0  | 0  |             |             |
| 21               |     | 0         | 0  | 0  | 0  |             |             |
| 22               |     | 0         | 0  | 0  | 0  |             |             |
| 23               |     | 0         | 0  | 0  | 0  |             |             |
| 24               |     | 0         | 0  | 0  | 0  |             |             |
| 25               |     | 0         | 0  | 0  | 0  |             |             |
| 26               |     | 0         | 0  | 0  | 0  |             |             |
| 27               |     | 0         | 0  | 0  | 0  |             |             |
| 28               |     | 0         | 0  | 0  | 0  |             |             |
| 29               |     | 0         | 0  | 0  | 0  |             |             |
| 30               |     | 0         | 0  | 0  | 0  |             |             |

Observer's Name (Print) Alvaro Castro  
 Observer's Signature Alvaro Castro Date 2/6/99  
 Organization St. Johns River Power Park  
 Certified by Egterra Technical Associate Date 12/2/98

EPA

## VISIBLE EMISSION OBSERVATION FORM 1

Method Used (Check One) Method 9 203A 203B Other: \_\_\_\_\_

Company Name St. Johns River Power Park  
 Facility Name St. Johns River Power Park  
 Street Address 11201 New Berlin Rd.  
 City Jacksonville State FL Zip 32226

Process LIMESTONE LOADOUT Unit # \_\_\_\_\_ Operating Mode 12,100 TPD  
 Control Equipment Water sprays Operating Mode 0% capacity

Describe Emission Point  
LOADER BUCKET GRABS FROM PILE

Height of Emiss. Pt. Start 8' End 8' Height of Emiss. Pt. Rel. to Observer Start 13' End 13'  
 Distance to Emiss. Pt. Start 160M End 160M Direction to Emiss. Pt. (Degrees) Start 356°NW End 356°NW

Vertical Angle to Obs. Pt. Start 4° End 4° Direction to Obs. Pt. (Degrees) Start 356°NW End 356°NW  
 Distance and Direction to Observation Point from Emission Point Start 20' W End 20' W AC

Describe Emissions  
 Start none End none  
 Emission Color Start none End none Water Droplet Plume Attached ☐ Detached ☐ None ☒

Describe Plume Background  
 Start \_\_\_\_\_ End \_\_\_\_\_  
 Background Color Start Ble End Ble Sky Conditions Start Clear End Clear  
 Wind Speed Start 0-5 End 0-5 Wind Direction Start SE End SE  
 Ambient Temp Start 81°F End 81°F Wet Bulb Temp 67°F RH Percent 54%

Source Layout Sketch  
 Draw North Arrow ☐ TN ☐ MN  
  
 Longitude N 30° 26' 28" Latitude W 81° 32' 57" Direction AC  
 Additional Information \_\_\_\_\_

Form Number 023J1 Page 1 of 2  
 Continued on VEO Form Number 023J2

| Observation Date |   | Time Zone |    | Start Time | End Time                       |
|------------------|---|-----------|----|------------|--------------------------------|
| 2/6/99           |   |           |    | 1045       | 1145                           |
| Sec<br>Min       | 0 | 15        | 30 | 45         | Comments                       |
| 1                | 0 | 0         | 0  | 0          |                                |
| 2                | 0 | 0         | 0  | 0          |                                |
| 3                | 0 | 0         | 0  | 0          |                                |
| 4                | 0 | 0         | 0  | 0          |                                |
| 5                | 0 | 0         | 0  | 0          |                                |
| 6                | 0 | 0         | 0  | 0          |                                |
| 7                | 0 | 0         | 0  | 0          |                                |
| 8                | 0 | 0         | 0  | 0          |                                |
| 9                | 0 | 0         | 0  | 0          |                                |
| 10               | 0 | 0         | 0  | 0          |                                |
| 11               | 0 | 0         | 0  | 0          |                                |
| 12               | 0 | 0         | 0  | 0          |                                |
| 13               | 0 | 0         | 0  | 0          |                                |
| 14               | 0 | 0         | 0  | 0          |                                |
| 15               | 0 | 0         | 0  | 0          |                                |
| 16               | 0 | 0         | 0  | 0          |                                |
| 17               | 0 | 0         | 0  | 0          |                                |
| 18               | 0 | 0         | 0  | 0          |                                |
| 19               | 0 | 0         | 0  | 0          |                                |
| 20               | 0 | 0         | 0  | 0          |                                |
| 21               | 0 | 0         | 0  | 0          |                                |
| 22               | 0 | 0         | 0  | 0          |                                |
| 23               | 0 | 0         | 0  | 0          |                                |
| 24               | 0 | 0         | 0  | 0          |                                |
| 25               | 0 | 0         | 0  | 0          |                                |
| 26               | 0 | 0         | 0  | 0          |                                |
| 27               | 0 | 0         | 0  | 0          |                                |
| 28               | 0 | 0         | 0  | 0          |                                |
| 29               | 0 | 0         | 0  | 0          |                                |
| 30               | 0 | 0         | 0  | 0          | 28 Trucks/hour @ 18 tons/truck |

Observer's Name (Print) Alvaro Castro  
 Observer Signature Alvaro Castro Date 2/6/99  
 Organization St. Johns River Power Park  
 Certified by Eastern Technical Associates Date 12/2/98

EPA

## VISIBLE EMISSION OBSERVATION FORM 1

Method Used (Circle One)  
Method 9 203A 2038 Other: \_\_\_\_\_

Company Name St. Johns River Power Park  
 Facility Name St. Johns River Power Park  
 Street Address 11201 New Berlin Rd.  
 City Jacksonville State FL Zip 32226

Process \_\_\_\_\_ Unit # \_\_\_\_\_ Operating Mode \_\_\_\_\_  
 Control Equipment \_\_\_\_\_ Operating Mode \_\_\_\_\_

Describe Emission Point

Height of Emiss. Pt. \_\_\_\_\_ Height of Emiss. Pt. Rel. to Observer \_\_\_\_\_  
 Start \_\_\_\_\_ End \_\_\_\_\_ Start \_\_\_\_\_ End \_\_\_\_\_  
 Distance to Emiss. Pt. \_\_\_\_\_ Direction to Emiss. Pt. (Degrees) \_\_\_\_\_  
 Start \_\_\_\_\_ End \_\_\_\_\_ Start \_\_\_\_\_ End \_\_\_\_\_

Vertical Angle to Obs. Pt. \_\_\_\_\_ Direction to Obs. Pt. (Degrees) \_\_\_\_\_  
 Start \_\_\_\_\_ End \_\_\_\_\_ Start \_\_\_\_\_ End \_\_\_\_\_  
 Distance and Direction to Observation Point from Emission Point  
 \_\_\_\_\_ End \_\_\_\_\_

Describe Emissions  
 Start \_\_\_\_\_ End \_\_\_\_\_  
 Emission Color \_\_\_\_\_ Water Droplet Plume  
 Start \_\_\_\_\_ End \_\_\_\_\_ Attached ☐ Detached ☐ None ☐

Describe Plume Background  
 Start \_\_\_\_\_ End \_\_\_\_\_  
 Background Color \_\_\_\_\_ Sky Conditions  
 Start \_\_\_\_\_ End \_\_\_\_\_  
 Wind Speed \_\_\_\_\_ Wind Direction  
 Start \_\_\_\_\_ End \_\_\_\_\_  
 Ambient Temp. \_\_\_\_\_ Wet Bulb Temp. \_\_\_\_\_ RH Percent  
 Start \_\_\_\_\_ End \_\_\_\_\_

Source Layout Sketch

Draw North Arrow  
☐ TN ☐ MN

Observer's Position

Observation Point

Sun Location Line

140°

Scale View

Stack With Plume

Sun

Wind

Longitude \_\_\_\_\_ Latitude \_\_\_\_\_ Elevation \_\_\_\_\_

Additional Information

Form Number 023J2 Page 2 of 2  
 Continued on VEO Form Number 023J1

| Observation Date |   | Time Zone |    |    | Start Time                  | End Time |
|------------------|---|-----------|----|----|-----------------------------|----------|
| 2/6/99           |   |           |    |    | 1045                        | 1145     |
| Sec<br>Min       | 0 | 15        | 30 | 45 | Comments                    |          |
| 1                | 0 | 0         | 0  | 0  |                             |          |
| 2                | 0 | 0         | 0  | 0  |                             |          |
| 3                | 0 | 0         | 0  | 0  |                             |          |
| 4                | 0 | 0         | 0  | 0  |                             |          |
| 5                | 0 | 0         | 0  | 0  |                             |          |
| 6                | 0 | 0         | 0  | 0  |                             |          |
| 7                | 0 | 0         | 0  | 0  |                             |          |
| 8                | 0 | 0         | 0  | 0  |                             |          |
| 9                | 0 | 0         | 0  | 0  |                             |          |
| 10               | 0 | 0         | 0  | 0  |                             |          |
| 11               | 0 | 0         | 0  | 0  |                             |          |
| 12               | 0 | 0         | 0  | 0  |                             |          |
| 13               | 0 | 0         | 0  | 0  |                             |          |
| 14               | 0 | 0         | 0  | 0  |                             |          |
| 15               | 0 | 0         | 0  | 0  |                             |          |
| 16               | 0 | 0         | 0  | 0  |                             |          |
| 17               | 0 | 0         | 0  | 0  |                             |          |
| 18               | 0 | 0         | 0  | 0  |                             |          |
| 19               | 0 | 0         | 0  | 0  |                             |          |
| 20               | 0 | 0         | 0  | 0  |                             |          |
| 21               | 0 | 0         | 0  | 0  |                             |          |
| 22               | 0 | 0         | 0  | 0  |                             |          |
| 23               | 0 | 0         | 0  | 0  |                             |          |
| 24               | 0 | 0         | 0  | 0  |                             |          |
| 25               | 0 | 0         | 0  | 0  |                             |          |
| 26               | 0 | 0         | 0  | 0  |                             |          |
| 27               | 0 | 0         | 0  | 0  |                             |          |
| 28               | 0 | 0         | 0  | 0  |                             |          |
| 29               | 0 | 0         | 0  | 0  |                             |          |
| 30               | 0 | 0         | 0  | 0  | 28 Trucks/hr. @ 15 tons/hr. |          |

Observer's Name (Print) Alvaro Castro  
 Observer's Signature Alvaro Castro Date 2/6/99  
 Organization St. Johns River Power Park  
 Certified By Eastern Technical Associates Date 12/2/98

EPA

## VISIBLE EMISSION OBSERVATION FORM 1

Method Used (Circle One)  
Method 9 203A 203B Other: \_\_\_\_\_

Company Name *St. Johns River Power Plant*  
 Facility Name *St. Johns River Power Plant*  
 Street Address *11201 New Berlin Rd.*  
 City *Tacksonville* State *FL* Zip *32226*

Process *LIMESTONE LOADOUT* Unit # \_\_\_\_\_ Operating Mode *12,100 TPD*  
 Control Equipment *Water spray* Operating Mode *84 Capacity*

Describe Emission Point  
*LOADER BUCKET DUMP TO TRUCK*

Height of Emiss. Pt. Start *8'* End *8'* Height of Emiss. Pt. Rel. to Observer Start *13'* End *13'*  
 Distance to Emiss. Pt. Start *160 M* End *160 M* Direction to Emiss. Pt. (Degrees) Start *356 NW* End *356 NW*

Vertical Angle to Obs. Pt. Start *4°* End *4°* Direction to Obs. Pt. (Degrees) Start *356 NW* End *356 NW*  
 Distance and Direction to Observation Point from Emission Point Start *20' W* End *20' W* *AC*

Describe Emissions  
 Start *none* End *none*  
 Emission Color *none* Water Droplet Plume  
 Start *none* End *none* Attached ☐ Detached ☐ None ☒

Describe Plume Background  
 Start \_\_\_\_\_ End \_\_\_\_\_  
 Background Color Start *Blue* End *Blue* Sky Conditions Start *Clear* End *Clear*  
 Wind Speed Start *0-5* End *0-5* Wind Direction Start *SE* End *SE*  
 Ambient Temp Start *81°F* End *81°F* Wet Bulb Temp *67°F* RH Percent *54%*

Source Layout Sketch

Draw North Arrow  
☐ TN ☐ MN

160' Limestone  
 Observation Point  
 Observer's Position  
 Canyon  
 Sun Location Line  
 AC

26.9 FEET  
 52.5 FEET  
 Side View

Stack With Plume  
 Sun  
 Wind

Longitude \_\_\_\_\_ Latitude \_\_\_\_\_ Direction \_\_\_\_\_

Additional Information

Form Number *02353* Page *1* of *2*  
 Continued on VEO Form Number *02354*

| Observation Date |     | Time Zone |    |    |    | Start Time                   | End Time |
|------------------|-----|-----------|----|----|----|------------------------------|----------|
| 2/6/98           |     |           |    |    |    | 1045                         | 1145     |
| Sec              | Min | 0         | 15 | 30 | 45 | Comments                     |          |
| 1                |     | 0         | 0  | 0  | 0  |                              |          |
| 2                |     | 0         | 0  | 0  | 0  |                              |          |
| 3                |     | 0         | 0  | 0  | 0  |                              |          |
| 4                |     | 0         | 0  | 0  | 0  |                              |          |
| 5                |     | 0         | 0  | 0  | 0  |                              |          |
| 6                |     | 0         | 0  | 0  | 0  |                              |          |
| 7                |     | 0         | 0  | 0  | 0  |                              |          |
| 8                |     | 0         | 0  | 0  | 0  |                              |          |
| 9                |     | 0         | 0  | 0  | 0  |                              |          |
| 10               |     | 0         | 0  | 0  | 0  |                              |          |
| 11               |     | 0         | 0  | 0  | 0  |                              |          |
| 12               |     | 0         | 0  | 0  | 0  |                              |          |
| 13               |     | 0         | 0  | 0  | 0  |                              |          |
| 14               |     | 0         | 0  | 0  | 0  |                              |          |
| 15               |     | 0         | 0  | 0  | 0  |                              |          |
| 16               |     | 0         | 0  | 0  | 0  |                              |          |
| 17               |     | 0         | 0  | 0  | 0  |                              |          |
| 18               |     | 0         | 0  | 0  | 0  |                              |          |
| 19               |     | 0         | 0  | 0  | 0  |                              |          |
| 20               |     | 0         | 0  | 0  | 0  |                              |          |
| 21               |     | 0         | 0  | 0  | 0  |                              |          |
| 22               |     | 0         | 0  | 0  | 0  |                              |          |
| 23               |     | 0         | 0  | 0  | 0  |                              |          |
| 24               |     | 0         | 0  | 0  | 0  |                              |          |
| 25               |     | 0         | 0  | 0  | 0  |                              |          |
| 26               |     | 0         | 0  | 0  | 0  |                              |          |
| 27               |     | 0         | 0  | 0  | 0  |                              |          |
| 28               |     | 0         | 0  | 0  | 0  |                              |          |
| 29               |     | 0         | 0  | 0  | 0  | 28 Trucks/hr @ 15 tons/truck |          |
| 30               |     | 0         | 0  | 0  | 0  |                              |          |

Observer's Name (Print) *Alvaro Castro*  
 Observer's Signature *Alvaro Castro* Date *2/6/99*  
 Organization *St. Johns River Power Plant*  
 Certified By *Eastern Technical Associates* Date *12/2/98*

EPA

## VISIBLE EMISSION OBSERVATION FORM 1

Method Used (Check One)  
Method 9 203A 203B Other: \_\_\_\_\_

Company Name St. Johns River Power Plant  
 Facility Name St. Johns River Power Plant  
 Street Address 11201 New Berlin Rd.  
 City Jacksonville State FL Zip 32226

Process \_\_\_\_\_ Unit # \_\_\_\_\_ Operating Mode \_\_\_\_\_  
 Control Equipment \_\_\_\_\_ Operating Mode \_\_\_\_\_

Describe Emission Point

Height of Emiss. Pt. \_\_\_\_\_ Height of Emiss. Pt. Rel. to Observer \_\_\_\_\_  
 Start \_\_\_\_\_ End \_\_\_\_\_ Start \_\_\_\_\_ End \_\_\_\_\_  
 Distance to Emiss. Pt. \_\_\_\_\_ Direction to Emiss. Pt. (Degrees) \_\_\_\_\_  
 Start \_\_\_\_\_ End \_\_\_\_\_ Start \_\_\_\_\_ End \_\_\_\_\_

Vertical Angle to Obs. Pt. \_\_\_\_\_ Direction to Obs. Pt. (Degrees) \_\_\_\_\_  
 Start \_\_\_\_\_ End \_\_\_\_\_ Start \_\_\_\_\_ End \_\_\_\_\_  
 Distance and Direction to Observation Point from Emission Point \_\_\_\_\_  
 Start \_\_\_\_\_ End \_\_\_\_\_

Describe Emissions  
 Start \_\_\_\_\_ End \_\_\_\_\_  
 Emission Color \_\_\_\_\_ Water Droplet Plume \_\_\_\_\_  
 Start \_\_\_\_\_ End \_\_\_\_\_ Attached ☐ Detached ☐ None ☐

Describe Plume Background  
 Start \_\_\_\_\_ End \_\_\_\_\_  
 Background Color \_\_\_\_\_ Sky Conditions \_\_\_\_\_  
 Start \_\_\_\_\_ End \_\_\_\_\_ Start \_\_\_\_\_ End \_\_\_\_\_  
 Wind Speed \_\_\_\_\_ Wind Direction \_\_\_\_\_  
 Start \_\_\_\_\_ End \_\_\_\_\_ Start \_\_\_\_\_ End \_\_\_\_\_  
 Ambient Temp. \_\_\_\_\_ Wet Bulb Temp. \_\_\_\_\_ RH Percent \_\_\_\_\_  
 Start \_\_\_\_\_ End \_\_\_\_\_

Source Layout Sketch

Draw North Arrow ☐ TN ☐ MN

X Observation Point

Observer's Position

140°

Sun Location Line

Stack With Plume

Sun

Wind

Longitude \_\_\_\_\_ Latitude \_\_\_\_\_ Declination \_\_\_\_\_

Additional Information

Form Number 023J4 Page 2 of 2  
 Continued on VEO Form Number 023J3

| Observation Date |   | Time Zone |    |    | Start Time               | End Time |
|------------------|---|-----------|----|----|--------------------------|----------|
| 2/6/99           |   |           |    |    | 1045                     | 1145     |
| Sec              | 0 | 15        | 30 | 45 | Comments                 |          |
| Min              |   |           |    |    |                          |          |
| 1                | 0 | 0         | 0  | 0  |                          |          |
| 2                | 0 | 0         | 0  | 0  |                          |          |
| 3                | 0 | 0         | 0  | 0  |                          |          |
| 4                | 0 | 0         | 0  | 0  |                          |          |
| 5                | 0 | 0         | 0  | 0  |                          |          |
| 6                | 0 | 0         | 0  | 0  |                          |          |
| 7                | 0 | 0         | 0  | 0  |                          |          |
| 8                | 0 | 0         | 0  | 0  |                          |          |
| 9                | 0 | 0         | 0  | 0  |                          |          |
| 10               | 0 | 0         | 0  | 0  |                          |          |
| 11               | 0 | 0         | 0  | 0  |                          |          |
| 12               | 0 | 0         | 0  | 0  |                          |          |
| 13               | 0 | 0         | 0  | 0  |                          |          |
| 14               | 0 | 0         | 0  | 0  |                          |          |
| 15               | 0 | 0         | 0  | 0  |                          |          |
| 16               | 0 | 0         | 0  | 0  |                          |          |
| 17               | 0 | 0         | 0  | 0  |                          |          |
| 18               | 0 | 0         | 0  | 0  |                          |          |
| 19               | 0 | 0         | 0  | 0  |                          |          |
| 20               | 0 | 0         | 0  | 0  |                          |          |
| 21               | 0 | 0         | 0  | 0  |                          |          |
| 22               | 0 | 0         | 0  | 0  |                          |          |
| 23               | 0 | 0         | 0  | 0  |                          |          |
| 24               | 0 | 0         | 0  | 0  |                          |          |
| 25               | 0 | 0         | 0  | 0  |                          |          |
| 26               | 0 | 0         | 0  | 0  |                          |          |
| 27               | 0 | 0         | 0  | 0  |                          |          |
| 28               | 0 | 0         | 0  | 0  |                          |          |
| 29               | 0 | 0         | 0  | 0  |                          |          |
| 30               | 0 | 0         | 0  | 0  | 28 Trucks / hr @ 1500 ft |          |

Observer's Name (Print) Alvaro Castro  
 Observer's Signature Alvaro Castro Date 2/6/99  
 Organization St. Johns River Power Plant  
 Certified By Eastern Technical District Date 12/2/98

EPA

## VISIBLE EMISSION OBSERVATION FORM 1

Method Used (Circle One)  
Method 9 203A 2038 Other: .

Company Name St. Johns River Power Plant  
 Facility Name St. Johns River Power Plant  
 Street Address 11201 New Berlin Rd.  
 City Jacksonville State FL Zip 32226

Process Unit #1 Boiler Fuel Loading Unit # 1 Operating Mode Fuel Loading  
 Control Equipment BAGHOUSE DC 4 Operating Mode 100% CAP.

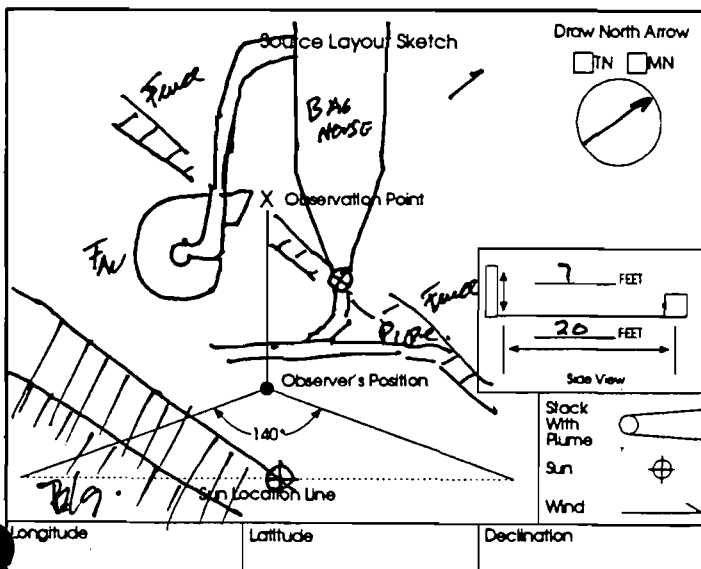
Describe Emission Point  
Baghouse Effluent.

Height of Emiss. Pt. Start 7' End 7' Height of Emiss. Pt. Rel. to Observer Start 2' End 2'  
 Distance to Emiss. Pt. Start 20' End 20' Direction to Emiss. Pt. (Degrees) Start 275° End 275°

Vertical Angle to Obs. Pt. Start 6° End 6° Direction to Obs. Pt. (Degrees) Start 278° End 278°  
 Distance and Direction to Observation Point from Emission Point Start 3' 90° End 3' 90°

Describe Emissions  
 Start none End none  
 Emission Color none Water Droplet Plume none  
 Start none End none Attached ☐ Detached ☐ None ☒

Describe Plume Background  
 Start open sky End open sky  
 Background Color Start Blue End Blue Sky Conditions Start clear End clear  
 Wind Speed Start 0-3 End 0-3 Wind Direction Start SW End SW  
 Ambient Temp. Start 82°F End 82°F Wet Bulb Temp. 75°F RH Percent 72%



Additional Information

Form Number 04711 Page 1 of 2  
Continued on VEO Form Number 04712

| Observation Date |   | Time Zone |    |    | Start Time | End Time |
|------------------|---|-----------|----|----|------------|----------|
| 4/23/99          |   |           |    |    | 10:45      | 11:45    |
| Sec              | 0 | 15        | 30 | 45 | Comments   |          |
| Mn               |   |           |    |    |            |          |
| 1                | 0 | 0         | 0  | 0  |            |          |
| 2                | 0 | 0         | 0  | 0  |            |          |
| 3                | 0 | 0         | 0  | 0  |            |          |
| 4                | 0 | 0         | 0  | 0  |            |          |
| 5                | 0 | 0         | 0  | 0  |            |          |
| 6                | 0 | 0         | 0  | 0  |            |          |
| 7                | 0 | 0         | 0  | 0  |            |          |
| 8                | 0 | 0         | 0  | 0  |            |          |
| 9                | 0 | 0         | 0  | 0  |            |          |
| 10               | 0 | 0         | 0  | 0  |            |          |
| 11               | 0 | 0         | 0  | 0  |            |          |
| 12               | 0 | 0         | 0  | 0  |            |          |
| 13               | 0 | 0         | 0  | 0  |            |          |
| 14               | 0 | 0         | 0  | 0  |            |          |
| 15               | 0 | 0         | 0  | 0  |            |          |
| 16               | 0 | 0         | 0  | 0  |            |          |
| 17               | 0 | 0         | 0  | 0  |            |          |
| 18               | 0 | 0         | 0  | 0  |            |          |
| 19               | 0 | 0         | 0  | 0  |            |          |
| 20               | 0 | 0         | 0  | 0  |            |          |
| 21               | 0 | 0         | 0  | 0  |            |          |
| 22               | 0 | 0         | 0  | 0  |            |          |
| 23               | 0 | 0         | 0  | 0  |            |          |
| 24               | 0 | 0         | 0  | 0  |            |          |
| 25               | 0 | 0         | 0  | 0  |            |          |
| 26               | 0 | 0         | 0  | 0  |            |          |
| 27               | 0 | 0         | 0  | 0  |            |          |
| 28               | 0 | 0         | 0  | 0  |            |          |
| 29               | 0 | 0         | 0  | 0  |            |          |
| 30               | 0 | 0         | 0  | 0  |            |          |

Observer's Name (Print) Alvaro Castro  
 Observer's Signature Alvaro Castro Date 4/23/98  
 Organization St. Johns River Power Plant  
 Certified by Eastern Technical Associates Date 12/2/98

EPA

## VISIBLE EMISSION OBSERVATION FORM 1

|                                      |      |      |              |
|--------------------------------------|------|------|--------------|
| Method Used (Circle One)<br>Method 9 | 203A | 203B | Other: _____ |
|--------------------------------------|------|------|--------------|

|                                                    |                    |                     |
|----------------------------------------------------|--------------------|---------------------|
| Company Name<br><i>St. Johns River Power Park</i>  |                    |                     |
| Facility Name<br><i>St. Johns River Power Park</i> |                    |                     |
| Street Address<br><i>11201 New Berlin Rd.</i>      |                    |                     |
| City<br><i>Jacksonville</i>                        | State<br><i>FL</i> | Zip<br><i>32226</i> |

|                                               |                                    |                                       |
|-----------------------------------------------|------------------------------------|---------------------------------------|
| Process<br><i>Unit #1 Boiler Fuel Loading</i> | Unit #<br><i>1</i>                 | Operating Mode<br><i>Fuel Loading</i> |
| Control Equipment<br><i>BASEHOUSE DC-4</i>    | Operating Mode<br><i>100% CAP.</i> |                                       |

|                                                 |  |                                                                |  |
|-------------------------------------------------|--|----------------------------------------------------------------|--|
| Describe Emission Point                         |  |                                                                |  |
| Height of Emiss. Pt.<br>Start _____ End _____   |  | Height of Emiss. Pt. Rel. to Observer<br>Start _____ End _____ |  |
| Distance to Emiss. Pt.<br>Start _____ End _____ |  | Direction to Emiss. Pt. (Degrees)<br>Start _____ End _____     |  |

|                                                                                          |  |                                                          |  |
|------------------------------------------------------------------------------------------|--|----------------------------------------------------------|--|
| Vertical Angle to Obs. Pt.<br>Start _____ End _____                                      |  | Direction to Obs. Pt. (Degrees)<br>Start _____ End _____ |  |
| Distance and Direction to Observation Point from Emission Point<br>Start _____ End _____ |  |                                                          |  |

|                                         |  |                                                                                                   |  |
|-----------------------------------------|--|---------------------------------------------------------------------------------------------------|--|
| Describe Emissions                      |  |                                                                                                   |  |
| Start _____ End _____                   |  | Water Droplet Plume                                                                               |  |
| Emission Color<br>Start _____ End _____ |  | Attached <input type="checkbox"/> Detached <input type="checkbox"/> None <input type="checkbox"/> |  |

|                                           |  |                                         |  |
|-------------------------------------------|--|-----------------------------------------|--|
| Describe Plume Background                 |  |                                         |  |
| Start _____ End _____                     |  | Sky Conditions<br>Start _____ End _____ |  |
| Background Color<br>Start _____ End _____ |  | Wind Direction<br>Start _____ End _____ |  |
| Wind Speed<br>Start _____ End _____       |  | Wet Bulb Temp.<br>Start _____ End _____ |  |
| Ambient Temp.<br>Start _____ End _____    |  | RH Percent<br>Start _____ End _____     |  |

|                      |          |                                                                             |  |
|----------------------|----------|-----------------------------------------------------------------------------|--|
| Source Layout Sketch |          | Draw North Arrow<br><input type="checkbox"/> TN <input type="checkbox"/> MN |  |
|                      |          |                                                                             |  |
|                      |          |                                                                             |  |
| Longitude            | Latitude | Declination                                                                 |  |

|                        |  |
|------------------------|--|
| Additional Information |  |
|                        |  |

|                              |       |      |       |    |   |
|------------------------------|-------|------|-------|----|---|
| Form Number                  | 04712 | Page | 2     | of | 2 |
| Continued on VEO Form Number |       |      | 04711 |    |   |

|                                    |   |           |    |                            |                          |
|------------------------------------|---|-----------|----|----------------------------|--------------------------|
| Observation Date<br><i>4/23/99</i> |   | Time Zone |    | Start Time<br><i>10:45</i> | End Time<br><i>11:45</i> |
| Sec<br>Min                         | 0 | 15        | 30 | 45                         | Comments                 |
| 1                                  | 0 | 0         | 0  | 0                          |                          |
| 2                                  | 0 | 0         | 0  | 0                          |                          |
| 3                                  | 0 | 0         | 0  | 0                          |                          |
| 4                                  | 0 | 0         | 0  | 0                          |                          |
| 5                                  | 0 | 0         | 0  | 0                          |                          |
| 6                                  | 0 | 0         | 0  | 0                          |                          |
| 7                                  | 0 | 0         | 0  | 0                          |                          |
| 8                                  | 0 | 0         | 0  | 0                          |                          |
| 9                                  | 0 | 0         | 0  | 0                          |                          |
| 10                                 | 0 | 0         | 0  | 0                          |                          |
| 11                                 | 0 | 0         | 0  | 0                          |                          |
| 12                                 | 0 | 0         | 0  | 0                          |                          |
| 13                                 | 0 | 0         | 0  | 0                          |                          |
| 14                                 | 0 | 0         | 0  | 0                          |                          |
| 15                                 | 0 | 0         | 0  | 0                          |                          |
| 16                                 | 0 | 0         | 0  | 0                          |                          |
| 17                                 | 0 | 0         | 0  | 0                          |                          |
| 18                                 | 0 | 0         | 0  | 0                          |                          |
| 19                                 | 0 | 0         | 0  | 0                          |                          |
| 20                                 | 0 | 0         | 0  | 0                          |                          |
| 21                                 | 0 | 0         | 0  | 0                          |                          |
| 22                                 | 0 | 0         | 0  | 0                          |                          |
| 23                                 | 0 | 0         | 0  | 0                          |                          |
| 24                                 | 0 | 0         | 0  | 0                          |                          |
| 25                                 | 0 | 0         | 0  | 0                          |                          |
| 26                                 | 0 | 0         | 0  | 0                          |                          |
| 27                                 | 0 | 0         | 0  | 0                          |                          |
| 28                                 | 0 | 0         | 0  | 0                          |                          |
| 29                                 | 0 | 0         | 0  | 0                          |                          |
| 30                                 | 0 | 0         | 0  | 0                          |                          |

|                                                     |                        |
|-----------------------------------------------------|------------------------|
| Observer's Name (Print)<br><i>Alvaro Castro</i>     |                        |
| Observer's Signature<br><i>Alvaro Castro</i>        | Date<br><i>4/23/99</i> |
| Organization<br><i>St. Johns River Power Park</i>   |                        |
| Certified by<br><i>Eastern Technical Associates</i> | Date<br><i>12/2/98</i> |



EPA

## VISIBLE EMISSION OBSERVATION FORM 1

Method Used (Circle One)  
Method 9 203A 2038 Other: \_\_\_\_\_

Company Name St. Johns River Power Park  
 Facility Name St. Johns River Power Park  
 Street Address 11201 New Berlin Rd.  
 City Jacksonville State FL Zip 32226

Process UNIT #2 Boiler Fuel Loading Unit # 2 Operating Mode FUEL LOADING  
 Control Equipment BAGHOUSE DCS Operating Mode 100% CMF

Describe Emission Point  
BAGHOUSE EFFLUENT  
 Height of Emiss. Pt. Start 7' End 7' Height of Emiss. Pt. Rel. to Observer Start 2' End 2'  
 Distance to Emiss. Pt. Start 25' End 25' Direction to Emiss. Pt. (Degrees) Start 262° End 262°

Vertical Angle to Obs. Pt. Start 5° End 5° Direction to Obs. Pt. (Degrees) Start 270° End 270°  
 Distance and Direction to Observation Point from Emission Point Start 5' 90° End 5' 90°

Describe Emissions  
 Start NONE End NONE  
 Emission Color Start NONE End NONE Water Droplet Plume Attached ☐ Detached ☐ None ☒

Describe Plume Background  
 Start OPEN SKY End OPEN SKY  
 Background Color Start Blue End Blue Sky Conditions Start clear End clear  
 Wind Speed Start 2-5 End 2-5 Wind Direction Start SW End SW  
 Ambient Temp. Start 77°F End 77°F Wet Bulb Temp. 67°F RH Percent 59%

Source Layout Sketch

Draw North Arrow ☐ TN ☐ MN

Longitude \_\_\_\_\_ Latitude \_\_\_\_\_ Declination \_\_\_\_\_

Additional Information

Form Number 04721 Page 1 of 2  
 Continued on VEO Form Number 04722

| Observation Date |     | Time Zone |    |    |    | Start Time  | End Time    |
|------------------|-----|-----------|----|----|----|-------------|-------------|
| <u>3/25/99</u>   |     |           |    |    |    | <u>1150</u> | <u>1250</u> |
| Sec              | Min | 0         | 15 | 30 | 45 | Comments    |             |
| 1                | 0   | 0         | 0  | 0  |    |             |             |
| 2                | 0   | 0         | 0  | 0  |    |             |             |
| 3                | 0   | 0         | 0  | 0  |    |             |             |
| 4                | 0   | 0         | 0  | 0  |    |             |             |
| 5                | 0   | 0         | 0  | 0  |    |             |             |
| 6                | 0   | 0         | 0  | 0  |    |             |             |
| 7                | 0   | 0         | 0  | 0  |    |             |             |
| 8                | 0   | 0         | 0  | 0  |    |             |             |
| 9                | 0   | 0         | 0  | 0  |    |             |             |
| 10               | 0   | 0         | 0  | 0  |    |             |             |
| 11               | 0   | 0         | 0  | 0  |    |             |             |
| 12               | 0   | 0         | 0  | 0  |    |             |             |
| 13               | 0   | 0         | 0  | 0  |    |             |             |
| 14               | 0   | 0         | 0  | 0  |    |             |             |
| 15               | 0   | 0         | 0  | 0  |    |             |             |
| 16               | 0   | 0         | 0  | 0  |    |             |             |
| 17               | 0   | 0         | 0  | 0  |    |             |             |
| 18               | 0   | 0         | 0  | 0  |    |             |             |
| 19               | 0   | 0         | 0  | 0  |    |             |             |
| 20               | 0   | 0         | 0  | 0  |    |             |             |
| 21               | 0   | 0         | 0  | 0  |    |             |             |
| 22               | 0   | 0         | 0  | 0  |    |             |             |
| 23               | 0   | 0         | 0  | 0  |    |             |             |
| 24               | 0   | 0         | 0  | 0  |    |             |             |
| 25               | 0   | 0         | 0  | 0  |    |             |             |
| 26               | 0   | 0         | 0  | 0  |    |             |             |
| 27               | 0   | 0         | 0  | 0  |    |             |             |
| 28               | 0   | 0         | 0  | 0  |    |             |             |
| 29               | 0   | 0         | 0  | 0  |    |             |             |
| 30               | 0   | 0         | 0  | 0  |    |             |             |

Observer's Name (Print) Alvaro Castro  
 Observer's Signature Alvaro Castro Date 3/25/99  
 Organization St. Johns River Power Park  
 Certified By Ester Technical Associates Date 12/2/98

EPA

## VISIBLE EMISSION OBSERVATION FORM 1

Method Used (Circle One)  
Method 9 203A 203B Other: \_\_\_\_\_

Company Name St. Johns River Power Park.  
 Facility Name St. Johns River Power Park.  
 Street Address 11201 New Berlin Rd.  
 City Tackewille State FL Zip 32206

Process Unit #2 Boiler Fuel Unit # 2 Operating Mode Fuel loading  
 Control Equipment BAS Hovco DC 5 Operating Mode 100% CAP.

Describe Emission Point  
 Height of Emiss. Pt. \_\_\_\_\_ Height of Emiss. Pt. Rel. to Observer \_\_\_\_\_  
 Start \_\_\_\_\_ End \_\_\_\_\_ Start \_\_\_\_\_ End \_\_\_\_\_  
 Distance to Emiss. Pt. \_\_\_\_\_ Direction to Emiss. Pt. (Degrees) \_\_\_\_\_  
 Start \_\_\_\_\_ End \_\_\_\_\_ Start \_\_\_\_\_ End \_\_\_\_\_

Vertical Angle to Obs. Pt. \_\_\_\_\_ Direction to Obs. Pt. (Degrees) \_\_\_\_\_  
 Start \_\_\_\_\_ End \_\_\_\_\_ Start \_\_\_\_\_ End \_\_\_\_\_  
 Distance and Direction to Observation Point from Emission Point \_\_\_\_\_  
 Start \_\_\_\_\_ End \_\_\_\_\_

Describe Emissions  
 Start \_\_\_\_\_ End \_\_\_\_\_  
 Emission Color \_\_\_\_\_ Water Droplet Plume \_\_\_\_\_  
 Start \_\_\_\_\_ End \_\_\_\_\_ Attached ☐ Detached ☐ None ☐

Describe Plume Background  
 Start \_\_\_\_\_ End \_\_\_\_\_  
 Background Color \_\_\_\_\_ Sky Conditions \_\_\_\_\_  
 Start \_\_\_\_\_ End \_\_\_\_\_ Start \_\_\_\_\_ End \_\_\_\_\_  
 Wind Speed \_\_\_\_\_ Wind Direction \_\_\_\_\_  
 Start \_\_\_\_\_ End \_\_\_\_\_ Start \_\_\_\_\_ End \_\_\_\_\_  
 Ambient Temp. \_\_\_\_\_ Wet Bulb Temp. \_\_\_\_\_ RH Percent \_\_\_\_\_  
 Start \_\_\_\_\_ End \_\_\_\_\_

Source Layout Sketch

Draw North Arrow  
☐ TN ☐ MN

X Observation Point

Observer's Position

140°

Sun Location Line

FEET

FEET

Side View

Stack With Plume

Sun

Wind

Longitude \_\_\_\_\_ Latitude \_\_\_\_\_ Declination \_\_\_\_\_

Additional Information  
 \_\_\_\_\_  
 \_\_\_\_\_

Form Number 04722 Page 2 of 2  
 Continued on VEO Form Number 04721

| Observation Date |   | Time Zone |    | Start Time  | End Time    |
|------------------|---|-----------|----|-------------|-------------|
|                  |   |           |    | <u>1150</u> | <u>1250</u> |
| Sec              | 0 | 15        | 30 | 45          | Comments    |
| 1                | 0 | 0         | 0  | 0           |             |
| 2                | 0 | 0         | 0  | 0           |             |
| 3                | 0 | 0         | 0  | 0           |             |
| 4                | 0 | 0         | 0  | 0           |             |
| 5                | 0 | 0         | 0  | 0           |             |
| 6                | 0 | 0         | 0  | 0           |             |
| 7                | 0 | 0         | 0  | 0           |             |
| 8                | 0 | 0         | 0  | 0           |             |
| 9                | 0 | 0         | 0  | 0           |             |
| 10               | 0 | 0         | 0  | 0           |             |
| 11               | 0 | 0         | 0  | 0           |             |
| 12               | 0 | 0         | 0  | 0           |             |
| 13               | 0 | 0         | 0  | 0           |             |
| 14               | 0 | 0         | 0  | 0           |             |
| 15               | 0 | 0         | 0  | 0           |             |
| 16               | 0 | 0         | 0  | 0           |             |
| 17               | 0 | 0         | 0  | 0           |             |
| 18               | 0 | 0         | 0  | 0           |             |
| 19               | 0 | 0         | 0  | 0           |             |
| 20               | 0 | 0         | 0  | 0           |             |
| 21               | 0 | 0         | 0  | 0           |             |
| 22               | 0 | 0         | 0  | 0           |             |
| 23               | 0 | 0         | 0  | 0           |             |
| 24               | 0 | 0         | 0  | 0           |             |
| 25               | 0 | 0         | 0  | 0           |             |
| 26               | 0 | 0         | 0  | 0           |             |
| 27               | 0 | 0         | 0  | 0           |             |
| 28               | 0 | 0         | 0  | 0           |             |
| 29               | 0 | 0         | 0  | 0           |             |
| 30               | 0 | 0         | 0  | 0           |             |

Observer's Name (Print) Alvaro Castro  
 Observer's Signature Alvaro Castro Date 3/25/97  
 Organization St. Johns River Power Park.  
 Certified by Eastern Technical Associates Date 12/2/98

# VISIBLE EMISSION OBSERVATION FORM 1

Method Used (Circle One) Method 9 203A 203B Other: \_\_\_\_\_

|                             |       |       |
|-----------------------------|-------|-------|
| Company Name                |       |       |
| St. Johns River Power Park. |       |       |
| Facility Name               |       |       |
| St. Johns River Power Park. |       |       |
| Street Address              |       |       |
| 11201 New Berlin Rd         |       |       |
| City                        | State | Zip   |
| Jacksonville                | FL    | 32226 |

|                                      |               |                             |
|--------------------------------------|---------------|-----------------------------|
| Process<br>SHIP UNLOADING PETROLE    | Unit #<br>COM | Operating Mode<br>1400 TPH. |
| Control Equipment<br>WET SUPPRESSION |               | Operating Mode<br>100% CAP. |

Describe Emission Point  
TRANSFER POINT CONVEYOR CT-2 TO CONVEYOR CT-3

|                                                           |                                                                        |
|-----------------------------------------------------------|------------------------------------------------------------------------|
| Height of Emiss. Pt.<br>Start <u>30'</u> End <u>30'</u>   | Height of Emiss. Pt. Rel. to Observer<br>Start <u>25</u> End <u>25</u> |
| Distance to Emiss. Pt.<br>Start <u>60'</u> End <u>60'</u> | Direction to Emiss. Pt. (Degrees)<br>Start <u>344</u> End <u>344</u>   |

|                                                                 |                                 |
|-----------------------------------------------------------------|---------------------------------|
| Vertical Angle to Obs. Pt.                                      | Direction to Obs. Pt. (Degrees) |
| Start 14° End 14°                                               | Start 358° End 358°             |
| Distance and Direction to Observation Point from Emission Point |                                 |
| Start 5' - 90°                                                  | End 5' 90°                      |

|                                   |                                                                                                              |
|-----------------------------------|--------------------------------------------------------------------------------------------------------------|
| Describe Emissions                |                                                                                                              |
| Start <i>none</i>                 | End <i>none</i>                                                                                              |
| Emission Color                    | Water Droplet Plume                                                                                          |
| Start <i>none</i> End <i>none</i> | Attached <input type="checkbox"/> Detached <input type="checkbox"/> None <input checked="" type="checkbox"/> |

|                           |          |            |
|---------------------------|----------|------------|
| Describe Plume Background |          |            |
| Start                     | OPEN SKY |            |
| Background Color          |          |            |
| Start                     | WHITE    |            |
| End                       | OVERCAST |            |
| Wind Speed                |          |            |
| Start                     | 0-2      |            |
| End                       | 0-2      |            |
| Wind Direction            |          |            |
| Start                     | SW       |            |
| End                       | SW       |            |
| Ambient Temp.             |          |            |
| Start                     | 79°      |            |
| End                       | 79°      |            |
| Wet Bulb Temp.            |          | RH Percent |
| 75°                       |          | 80%        |

Source Layout Sketch

Draw North Arrow

☐ TN ☐ MN

25 FEET

60 FEET

Side View

Stack With Plume

Sun

Wind

Longitude

Latitude

Declination

|                        |
|------------------------|
| Additional Information |
|                        |

|                              |   |   |   |   |   |      |   |    |   |   |   |
|------------------------------|---|---|---|---|---|------|---|----|---|---|---|
| Form Number                  | 0 | 2 | 3 | e | 1 | Page | 1 | Of | 2 |   |   |
| Continued on VEO Form Number |   |   |   |   |   |      | 0 | 2  | 3 | e | 2 |

| Observation Date<br>4/27/99 |   | Time Zone |    |    | Start Time<br>0835 | End Time<br>0935 |
|-----------------------------|---|-----------|----|----|--------------------|------------------|
| Sec<br>Min                  | 0 | 15        | 30 | 45 | Comments           |                  |
| 1                           | 0 | 0         | 0  | 0  |                    |                  |
| 2                           | 0 | 0         | 0  | 0  |                    |                  |
| 3                           | 0 | 0         | 0  | 0  |                    |                  |
| 4                           | 0 | 0         | 0  | 0  |                    |                  |
| 5                           | 0 | 0         | 0  | 0  |                    |                  |
| 6                           | 0 | 0         | 0  | 0  |                    |                  |
| 7                           | 0 | 0         | 0  | 0  |                    |                  |
| 8                           | 0 | 0         | 0  | 0  |                    |                  |
| 9                           | 0 | 0         | 0  | 0  |                    |                  |
| 10                          | 0 | 0         | 0  | 0  |                    |                  |
| 11                          | 0 | 0         | 0  | 0  |                    |                  |
| 12                          | 0 | 0         | 0  | 0  |                    |                  |
| 13                          | 0 | 0         | 0  | 0  |                    |                  |
| 14                          | 0 | 0         | 0  | 0  |                    |                  |
| 15                          | 0 | 0         | 0  | 0  |                    |                  |
| 16                          | 0 | 0         | 0  | 0  |                    |                  |
| 17                          | 0 | 0         | 0  | 0  |                    |                  |
| 18                          | 0 | 0         | 0  | 0  |                    |                  |
| 19                          | 0 | 0         | 0  | 0  |                    |                  |
| 20                          | 0 | 0         | 0  | 0  |                    |                  |
| 21                          | 0 | 0         | 0  | 0  |                    |                  |
| 22                          | 0 | 0         | 0  | 0  |                    |                  |
| 23                          | 0 | 0         | 0  | 0  |                    |                  |
| 24                          | 0 | 0         | 0  | 0  |                    |                  |
| 25                          | 0 | 0         | 0  | 0  |                    |                  |
| 26                          | 0 | 0         | 0  | 0  |                    |                  |
| 27                          | 0 | 0         | 0  | 0  |                    |                  |
| 28                          | 0 | 0         | 0  | 0  |                    |                  |
| 29                          | 0 | 0         | 0  | 0  |                    |                  |
| 30                          | 0 | 0         | 0  | 0  |                    |                  |

|                              |                            |               |
|------------------------------|----------------------------|---------------|
| Observer's Name (Print)      |                            | Alvaro Castro |
| Observer's Signature         | Date                       | 4/27/99       |
| Organization                 | St. Johns River Power Park |               |
| Certified By                 | Date                       | 12/2/98       |
| Eastern Technical Associates |                            |               |

EPA

## VISIBLE EMISSION OBSERVATION FORM 1

|                                             |      |      |              |
|---------------------------------------------|------|------|--------------|
| Method Used (Circle One)<br><b>Method 9</b> | 203A | 203B | Other: _____ |
|---------------------------------------------|------|------|--------------|

|                                                    |                    |                     |
|----------------------------------------------------|--------------------|---------------------|
| Company Name<br><b>St. Johns River Power Park.</b> |                    |                     |
| Facility Name<br><b>St. Johns River Power Park</b> |                    |                     |
| Street Address<br><b>11201 New Berlin Rd.</b>      |                    |                     |
| City<br><b>Jacksonville</b>                        | State<br><b>FL</b> | Zip<br><b>32226</b> |

|                                             |                      |                                    |
|---------------------------------------------|----------------------|------------------------------------|
| Process<br><b>SHIP UNLOADING PEROX</b>      | Unit #<br><b>COM</b> | Operating Mode<br><b>1400 TPA</b>  |
| Control Equipment<br><b>WET SUPPRESSION</b> |                      | Operating Mode<br><b>100% CAP.</b> |

|                                                                                 |
|---------------------------------------------------------------------------------|
| Describe Emission Point<br><b>TRANSFER Point CONVEYOR CT-2 to CONVEYOR CT-3</b> |
|---------------------------------------------------------------------------------|

|                                                 |                                                                |
|-------------------------------------------------|----------------------------------------------------------------|
| Height of Emiss. Pt.<br>Start _____ End _____   | Height of Emiss. Pt. Rel. to Observer<br>Start _____ End _____ |
| Distance to Emiss. Pt.<br>Start _____ End _____ | Direction to Emiss. Pt. (Degrees)<br>Start _____ End _____     |

|                                                                                          |                                                          |
|------------------------------------------------------------------------------------------|----------------------------------------------------------|
| Vertical Angle to Obs. Pt.<br>Start _____ End _____                                      | Direction to Obs. Pt. (Degrees)<br>Start _____ End _____ |
| Distance and Direction to Observation Point from Emission Point<br>Start _____ End _____ |                                                          |

|                       |                                                                                                   |
|-----------------------|---------------------------------------------------------------------------------------------------|
| Describe Emissions    |                                                                                                   |
| Start _____ End _____ | Water Droplet Plume                                                                               |
| Emission Color        | Attached <input type="checkbox"/> Detached <input type="checkbox"/> None <input type="checkbox"/> |

|                           |                       |
|---------------------------|-----------------------|
| Describe Plume Background |                       |
| Start _____ End _____     | Sky Conditions        |
| Background Color          | Start _____ End _____ |
| Wind Speed                | Wind Direction        |
| Start _____ End _____     | Start _____ End _____ |
| Ambient Temp.             | Wet Bulb Temp.        |
| Start _____ End _____     | RH Percent            |

|                      |          |                                                                             |
|----------------------|----------|-----------------------------------------------------------------------------|
| Source Layout Sketch |          | Draw North Arrow<br><input type="checkbox"/> TN <input type="checkbox"/> MN |
|                      |          |                                                                             |
|                      |          |                                                                             |
| Longitude            | Latitude | Declination                                                                 |

|                        |
|------------------------|
| Additional Information |
|                        |

|                              |   |   |   |   |   |      |   |    |   |   |   |   |
|------------------------------|---|---|---|---|---|------|---|----|---|---|---|---|
| Form Number                  | 0 | 2 | 3 | e | 2 | Page | 2 | of | 2 |   |   |   |
| Continued on VEO Form Number |   |   |   |   |   |      |   | 0  | 2 | 3 | e | 1 |

|                                    |           |                            |                          |    |          |
|------------------------------------|-----------|----------------------------|--------------------------|----|----------|
| Observation Date<br><b>4/27/99</b> | Time Zone | Start Time<br><b>08:35</b> | End Time<br><b>09:35</b> |    |          |
| Sec<br>Min                         | 0         | 15                         | 30                       | 45 | Comments |
| 1                                  | 0         | 0                          | 0                        | 0  |          |
| 2                                  | 0         | 0                          | 0                        | 0  |          |
| 3                                  | 0         | 0                          | 0                        | 0  |          |
| 4                                  | 0         | 0                          | 0                        | 0  |          |
| 5                                  | 0         | 0                          | 0                        | 0  |          |
| 6                                  | 0         | 0                          | 0                        | 0  |          |
| 7                                  | 0         | 0                          | 0                        | 0  |          |
| 8                                  | 0         | 0                          | 0                        | 0  |          |
| 9                                  | 0         | 0                          | 0                        | 0  |          |
| 10                                 | 0         | 0                          | 0                        | 0  |          |
| 11                                 | 0         | 0                          | 0                        | 0  |          |
| 12                                 | 0         | 0                          | 0                        | 0  |          |
| 13                                 | 0         | 0                          | 0                        | 0  |          |
| 14                                 | 0         | 0                          | 0                        | 0  |          |
| 15                                 | 0         | 0                          | 0                        | 0  |          |
| 16                                 | 0         | 0                          | 0                        | 0  |          |
| 17                                 | 0         | 0                          | 0                        | 0  |          |
| 18                                 | 0         | 0                          | 0                        | 0  |          |
| 19                                 | 0         | 0                          | 0                        | 0  |          |
| 20                                 | 0         | 0                          | 0                        | 0  |          |
| 21                                 | 0         | 0                          | 0                        | 0  |          |
| 22                                 | 0         | 0                          | 0                        | 0  |          |
| 23                                 | 0         | 0                          | 0                        | 0  |          |
| 24                                 | 0         | 0                          | 0                        | 0  |          |
| 25                                 | 0         | 0                          | 0                        | 0  |          |
| 26                                 | 0         | 0                          | 0                        | 0  |          |
| 27                                 | 0         | 0                          | 0                        | 0  |          |
| 28                                 | 0         | 0                          | 0                        | 0  |          |
| 29                                 | 0         | 0                          | 0                        | 0  |          |
| 30                                 | 0         | 0                          | 0                        | 0  |          |

|                                                     |                        |
|-----------------------------------------------------|------------------------|
| Observer's Name (Print)<br><b>Alvaro Castro</b>     | Date<br><b>4/27/99</b> |
| Observer's Signature<br><b>Alvaro Castro</b>        | Date<br><b>12/2/98</b> |
| Organization<br><b>St. Johns River Power Park</b>   |                        |
| Certified By<br><b>Eastern Technical Associates</b> | Date<br><b>12/2/98</b> |

EPA

## VISIBLE EMISSION OBSERVATION FORM 1

Method Used (Circle One)  
Method 9 203A 203B Other: \_\_\_\_\_

Company Name  
St. Johns River Power Park.

Facility Name  
St. Johns River Power Park.

Street Address  
11201 New Berlin Rd.

City  
Jacksonville

State  
FL

Zip  
32226

Process  
Quick lime silo

Unit #  
COM

Operating Mode  
16 TPH.

Control Equipment  
BAGHOUSE

Operating Mode  
100% CAP.

Describe Emission Point  
BAGHOUSE Effluent on top of Quick Lime Silo.

Height of Emiss. Pt.  
Start 87' End 87'

Height of Emiss. Pt. Rel. to Observer  
Start 84' End 84'

Distance to Emiss. Pt.  
Start 150 End 150

Direction to Emiss. Pt. (Degrees)  
Start 314° End 314°

Vertical Angle to Obs. Pt.  
Start 30° End 30°

Direction to Obs. Pt. (Degrees)  
Start 314° End 314°

Distance and Direction to Observation Point from Emission Point  
Start S'-180° End S'-180°

Describe Emissions  
Start none End none

Emission Color  
Start none End none

Water Droplet Plume  
Attached ☐ Detached ☐ None ☒

Describe Plume Background  
Start OPEN SKY End OPEN SKY.

Background Color  
Start GRAY End GRAY

Sky Conditions  
Start cloudy End cloudy.

Wind Speed  
Start 0-5 End 0-5

Wind Direction  
Start NE End NE

Ambient Temp.  
Start 68°F End 68°F

Wet Bulb Temp.  
Start 65°F End 84°F

RH Percent  
Start 84%

Source Layout Sketch

Draw North Arrow  
☐ TN ☐ MN

Longitude \_\_\_\_\_ Latitude \_\_\_\_\_ Declination \_\_\_\_\_

Additional Information

\_\_\_\_\_

\_\_\_\_\_

Form Number 0521 Page 1 of 2

Continued on VEO Form Number 0522

| Observation Date |   | Time Zone |    |    | Start Time | End Time |
|------------------|---|-----------|----|----|------------|----------|
| 4/29/99          |   |           |    |    | 0945       | 1045     |
| Sec<br>Min       | 0 | 15        | 30 | 45 | Comments   |          |
| 1                | 0 | 0         | 0  | 0  |            |          |
| 2                | 0 | 0         | 0  | 0  |            |          |
| 3                | 0 | 0         | 0  | 0  |            |          |
| 4                | 0 | 0         | 0  | 0  |            |          |
| 5                | 0 | 0         | 0  | 0  |            |          |
| 6                | 0 | 0         | 0  | 0  |            |          |
| 7                | 0 | 0         | 0  | 0  |            |          |
| 8                | 0 | 0         | 0  | 0  |            |          |
| 9                | 0 | 0         | 0  | 0  |            |          |
| 10               | 0 | 0         | 0  | 0  |            |          |
| 11               | 0 | 0         | 0  | 0  |            |          |
| 12               | 0 | 0         | 0  | 0  |            |          |
| 13               | 0 | 0         | 0  | 0  |            |          |
| 14               | 0 | 0         | 0  | 0  |            |          |
| 15               | 0 | 0         | 0  | 0  |            |          |
| 16               | 0 | 0         | 0  | 0  |            |          |
| 17               | 0 | 0         | 0  | 0  |            |          |
| 18               | 0 | 0         | 0  | 0  |            |          |
| 19               | 0 | 0         | 0  | 0  |            |          |
| 20               | 0 | 0         | 0  | 0  |            |          |
| 21               | 0 | 0         | 0  | 0  |            |          |
| 22               | 0 | 0         | 0  | 0  |            |          |
| 23               | 0 | 0         | 0  | 0  |            |          |
| 24               | 0 | 0         | 0  | 0  |            |          |
| 25               | 0 | 0         | 0  | 0  |            |          |
| 26               | 0 | 0         | 0  | 0  |            |          |
| 27               | 0 | 0         | 0  | 0  |            |          |
| 28               | 0 | 0         | 0  | 0  |            |          |
| 29               | 0 | 0         | 0  | 0  |            |          |
| 30               | 0 | 0         | 0  | 0  |            |          |

Observer's Name (Print) Alvaro Castro

Observer's Signature Alvaro Castro Date 4/29/99

Organization St. Johns River Power Park

Certified By Eastern Technical Associates Date 12/2/98

EPA

## VISIBLE EMISSION OBSERVATION FORM 1

Method Used (Circle One) Method 9 203A 2038 Other: \_\_\_\_\_

Company Name St. Johns River Power Park.  
 Facility Name St. Johns River Power Park.  
 Street Address 11201 New Berlin Rd.  
 City Jacksonville State FL Zip 32226

Process Quin line sibs Unit # Com. Operating Mode 16 TPH.  
 Control Equipment DAS House Operating Mode 100% CAP

Describe Emission Point  
 Height of Emiss. Pt. \_\_\_\_\_ Height of Emiss. Pt. Rel. to Observer \_\_\_\_\_  
 Start \_\_\_\_\_ End \_\_\_\_\_ Start \_\_\_\_\_ End \_\_\_\_\_  
 Distance to Emiss. Pt. \_\_\_\_\_ Direction to Emiss. Pt. (Degrees) \_\_\_\_\_  
 Start \_\_\_\_\_ End \_\_\_\_\_ Start \_\_\_\_\_ End \_\_\_\_\_

Vertical Angle to Obs. Pt. \_\_\_\_\_ Direction to Obs. Pt. (Degrees) \_\_\_\_\_  
 Start \_\_\_\_\_ End \_\_\_\_\_ Start \_\_\_\_\_ End \_\_\_\_\_  
 Distance and Direction to Observation Point from Emission Point \_\_\_\_\_  
 Start \_\_\_\_\_ End \_\_\_\_\_

Describe Emissions  
 Start \_\_\_\_\_ End \_\_\_\_\_  
 Emission Color \_\_\_\_\_ Water Droplet Plume \_\_\_\_\_  
 Start \_\_\_\_\_ End \_\_\_\_\_ Attached ☐ Detached ☐ None ☐

Describe Plume Background  
 Start \_\_\_\_\_ End \_\_\_\_\_  
 Background Color \_\_\_\_\_ Sky Conditions \_\_\_\_\_  
 Start \_\_\_\_\_ End \_\_\_\_\_ Start \_\_\_\_\_ End \_\_\_\_\_  
 Wind Speed \_\_\_\_\_ Wind Direction \_\_\_\_\_  
 Start \_\_\_\_\_ End \_\_\_\_\_ Start \_\_\_\_\_ End \_\_\_\_\_  
 Ambient Temp. \_\_\_\_\_ Wet Bulb Temp. \_\_\_\_\_ RH Percent \_\_\_\_\_  
 Start \_\_\_\_\_ End \_\_\_\_\_

Source Layout Sketch

Draw North Arrow ☐ TN ☐ MN

X Observation Point

Observer's Position

140°

Sun Location Line

Stack With Plume

Sun

Wind

Longitude \_\_\_\_\_ Latitude \_\_\_\_\_ Declination \_\_\_\_\_

Additional Information \_\_\_\_\_  
 \_\_\_\_\_  
 \_\_\_\_\_

Form Number 0522 Page 2 of 2  
 Continued on VEO Form Number 0521

| Sec | 0 | 15 | 30 | 45 | Comments |
|-----|---|----|----|----|----------|
| 1   | 0 | 0  | 0  | 0  |          |
| 2   | 0 | 0  | 0  | 0  |          |
| 3   | 0 | 0  | 0  | 0  |          |
| 4   | 0 | 0  | 0  | 0  |          |
| 5   | 0 | 0  | 0  | 0  |          |
| 6   | 0 | 0  | 0  | 0  |          |
| 7   | 0 | 0  | 0  | 0  |          |
| 8   | 0 | 0  | 0  | 0  |          |
| 9   | 0 | 0  | 0  | 0  |          |
| 10  | 0 | 0  | 0  | 0  |          |
| 11  | 0 | 0  | 0  | 0  |          |
| 12  | 0 | 0  | 0  | 0  |          |
| 13  | 0 | 0  | 0  | 0  |          |
| 14  | 0 | 0  | 0  | 0  |          |
| 15  | 0 | 0  | 0  | 0  |          |
| 16  | 0 | 0  | 0  | 0  |          |
| 17  | 0 | 0  | 0  | 0  |          |
| 18  | 0 | 0  | 0  | 0  |          |
| 19  | 0 | 0  | 0  | 0  |          |
| 20  | 0 | 0  | 0  | 0  |          |
| 21  | 0 | 0  | 0  | 0  |          |
| 22  | 0 | 0  | 0  | 0  |          |
| 23  | 0 | 0  | 0  | 0  |          |
| 24  | 0 | 0  | 0  | 0  |          |
| 25  | 0 | 0  | 0  | 0  |          |
| 26  | 0 | 0  | 0  | 0  |          |
| 27  | 0 | 0  | 0  | 0  |          |
| 28  | 0 | 0  | 0  | 0  |          |
| 29  | 0 | 0  | 0  | 0  |          |
| 30  | 0 | 0  | 0  | 0  |          |

Observer's Name (Print) Alvaro Castro  
 Observer's Signature Alvaro Castro Date 4/29/99  
 Organization St. Johns River Power Park.  
 Certified by Eastern Technical Associates Date 12/2/98

EPA

## VISIBLE EMISSION OBSERVATION FORM 1

Method Used (Circle One)  
Method 9 203A 2038 Other: \_\_\_\_\_

Company Name  
**ST. JOHNS RIVER POWER PARK**

Facility Name  
**11201 NEW BERLIN ROAD**

Street Address

City **JACKSONVILLE** State **FL** Zip **32226**

Process **PETCOKE SHIPUNLOADING** Unit # **COM** Operating Mode **66% CAPACITY**

Control Equipment **WET SUPPRESSION** Operating Mode **100% CAPACITY**

Describe Emission Point  
**TRANSFER STATION #3 CT3-CT4 CONV. BELT**

Height of Emiss. Pt. Start **30'** End **30'** Height of Emiss. Pt. Rel. to Observer Start **26'** End **26'**

Distance to Emiss. Pt. Start **35'** End **35'** Direction to Emiss. Pt. (Degrees) Start **285°** End **285°**

Vertical Angle to Obs. Pt. Start **30°** End **30°** Direction to Obs. Pt. (Degrees) Start **292°** End **292°**

Distance and Direction to Observation Point from Emission Point Start **-10'-45°** End **-10'-45°**

Describe Emissions

Start **NONE** End **NONE**

Emission Color Start **NONE** End **NONE** Water Droplet Plume Attached ☐ Detached ☐ None ☒

Describe Plume Background

Start **SCATTERED-OPEN SKY** End **OVERCAST-OPEN SKY**

Background Color Start **BLUE/WHITE** End **WHITE** Sky Conditions Start **SCATTERED** End **OVERCAST**

Wind Speed Start **3-5 MPH** End **3-5 MPH** Wind Direction Start **270°** End **270°**

Ambient Temp. Start \_\_\_\_\_ End \_\_\_\_\_ Wet Bulb Temp. \_\_\_\_\_ RH Percent \_\_\_\_\_

Source Layout Sketch

Draw North Arrow ☐ TN ☐ MN

Observer's Position

140°

Sun Location Line

Stack With Plume

Sun

Wind

Longitude \_\_\_\_\_ Latitude \_\_\_\_\_ Declination \_\_\_\_\_

Additional Information

Form Number **23031** Page **1** of **2**  
Continued on VEO Form Number **23032**

| Observation Date |     | Time Zone  |    | Start Time  |    | End Time    |  |
|------------------|-----|------------|----|-------------|----|-------------|--|
| <b>4/27/99</b>   |     | <b>EDT</b> |    | <b>0835</b> |    | <b>0935</b> |  |
| Sec              | Min | 0          | 15 | 30          | 45 | Comments    |  |
| 1                | 0   | 0          | 0  | 0           |    |             |  |
| 2                | 0   | 0          | 0  | 0           |    |             |  |
| 3                | 0   | 0          | 0  | 0           |    |             |  |
| 4                | 0   | 0          | 0  | 0           |    |             |  |
| 5                | 0   | 0          | 0  | 0           |    |             |  |
| 6                | 0   | 0          | 0  | 0           |    |             |  |
| 7                | 0   | 0          | 0  | 0           |    |             |  |
| 8                | 0   | 0          | 0  | 0           |    |             |  |
| 9                | 0   | 0          | 0  | 0           |    |             |  |
| 10               | 0   | 0          | 0  | 0           |    |             |  |
| 11               | 0   | 0          | 0  | 0           |    |             |  |
| 12               | 0   | 0          | 0  | 0           |    |             |  |
| 13               | 0   | 0          | 0  | 0           |    |             |  |
| 14               | 0   | 0          | 0  | 0           |    |             |  |
| 15               | 0   | 0          | 0  | 0           |    |             |  |
| 16               | 0   | 0          | 0  | 0           |    |             |  |
| 17               | 0   | 0          | 0  | 0           |    |             |  |
| 18               | 0   | 0          | 0  | 0           |    |             |  |
| 19               | 0   | 0          | 0  | 0           |    |             |  |
| 20               | 0   | 0          | 0  | 0           |    |             |  |
| 21               | 0   | 0          | 0  | 0           |    |             |  |
| 22               | 0   | 0          | 0  | 0           |    |             |  |
| 23               | 0   | 0          | 0  | 0           |    |             |  |
| 24               | 0   | 0          | 0  | 0           |    |             |  |
| 25               | 0   | 0          | 0  | 0           |    |             |  |
| 26               | 0   | 0          | 0  | 0           |    |             |  |
| 27               | 0   | 0          | 0  | 0           |    |             |  |
| 28               | 0   | 0          | 0  | 0           |    |             |  |
| 29               | 0   | 0          | 0  | 0           |    |             |  |
| 30               | 0   | 0          | 0  | 0           |    |             |  |

Observer's Name (Print) **MARK K. LOECHMELT**

Observer's Signature **Mark K. Loechmelt** Date **4/27/99**

Organization **ST. JOHNS RIVER POWER PARK**

Certified By **EASTERN TECHNICAL ASSOCIATES** Date **12/3/98**

EPA

## VISIBLE EMISSION OBSERVATION FORM 1

|                          |      |      |              |
|--------------------------|------|------|--------------|
| Method Used (Circle One) | 203A | 203B | Other: _____ |
| Method 9                 |      |      |              |

|                                                    |                    |                     |
|----------------------------------------------------|--------------------|---------------------|
| Company Name<br><b>ST. JOHNS RIVER POWER PARK</b>  |                    |                     |
| Facility Name<br><b>ST. JOHNS RIVER POWER PARK</b> |                    |                     |
| Street Address<br><b>11201 NEW BERLIN ROAD</b>     |                    |                     |
| City<br><b>JACKSONVILLE</b>                        | State<br><b>FL</b> | Zip<br><b>32226</b> |

|                                             |                      |                                        |
|---------------------------------------------|----------------------|----------------------------------------|
| Process<br><b>PETROLEUM SHIP UNLOADING</b>  | Unit #<br><b>COM</b> | Operating Mode                         |
| Control Equipment<br><b>WAT SUPPRESSION</b> |                      | Operating Mode<br><b>100% CAPACITY</b> |

|                                                          |                                                                         |
|----------------------------------------------------------|-------------------------------------------------------------------------|
| Describe Emission Point                                  |                                                                         |
|                                                          |                                                                         |
| Height of Emiss. Pt.<br>Start                      End   | Height of Emiss. Pt. Rel. to Observer<br>Start                      End |
| Distance to Emiss. Pt.<br>Start                      End | Direction to Emiss. Pt. (Degrees)<br>Start                      End     |

|                                                                                                   |                                                                   |
|---------------------------------------------------------------------------------------------------|-------------------------------------------------------------------|
| Vertical Angle to Obs. Pt.<br>Start                      End                                      | Direction to Obs. Pt. (Degrees)<br>Start                      End |
| Distance and Direction to Observation Point from Emission Point<br>Start                      End |                                                                   |

|                                |                                                                                                   |
|--------------------------------|---------------------------------------------------------------------------------------------------|
| Describe Emissions             |                                                                                                   |
| Start                      End | Water Droplet Plume                                                                               |
| Emission Color                 | Attached <input type="checkbox"/> Detached <input type="checkbox"/> None <input type="checkbox"/> |
| Start                      End |                                                                                                   |

|                                |                                |
|--------------------------------|--------------------------------|
| Describe Plume Background      |                                |
| Start                      End | Sky Conditions                 |
| Background Color               | Start                      End |
| Wind Speed                     | Wind Direction                 |
| Start                      End | Start                      End |
| Ambient Temp.                  | Wet Bulb Temp.                 |
| Start                      End | RH Percent                     |

|                      |          |                                                                             |
|----------------------|----------|-----------------------------------------------------------------------------|
| Source Layout Sketch |          | Draw North Arrow<br><input type="checkbox"/> TN <input type="checkbox"/> MN |
|                      |          |                                                                             |
|                      |          |                                                                             |
| Longitude            | Latitude | Declination                                                                 |

|                        |  |
|------------------------|--|
| Additional Information |  |
|                        |  |

|                              |       |       |        |
|------------------------------|-------|-------|--------|
| Form Number                  | 23e32 | Page  | 2 of 2 |
| Continued on VEO Form Number |       | 23e31 |        |

|                                    |                         |                           |                         |  |
|------------------------------------|-------------------------|---------------------------|-------------------------|--|
| Observation Date<br><b>4/27/99</b> | Time Zone<br><b>EST</b> | Start Time<br><b>0835</b> | End Time<br><b>0935</b> |  |
| Sec<br>Min                         | 0                       | 15                        | 30                      |  |
|                                    | 45                      |                           |                         |  |
|                                    |                         |                           | Comments                |  |
| 1                                  | 0                       | 0                         | 0                       |  |
| 2                                  | 0                       | 0                         | 0                       |  |
| 3                                  | 0                       | 0                         | 0                       |  |
| 4                                  | 0                       | 0                         | 0                       |  |
| 5                                  | 0                       | 0                         | 0                       |  |
| 6                                  | 0                       | 0                         | 0                       |  |
| 7                                  | 0                       | 0                         | 0                       |  |
| 8                                  | 0                       | 0                         | 0                       |  |
| 9                                  | 0                       | 0                         | 0                       |  |
| 10                                 | 0                       | 0                         | 0                       |  |
| 11                                 | 0                       | 0                         | 0                       |  |
| 12                                 | 0                       | 0                         | 0                       |  |
| 13                                 | 0                       | 0                         | 0                       |  |
| 14                                 | 0                       | 0                         | 0                       |  |
| 15                                 | 0                       | 0                         | 0                       |  |
| 16                                 | 0                       | 0                         | 0                       |  |
| 17                                 | 0                       | 0                         | 0                       |  |
| 18                                 | 0                       | 0                         | 0                       |  |
| 19                                 | 0                       | 0                         | 0                       |  |
| 20                                 | 0                       | 0                         | 0                       |  |
| 21                                 | 0                       | 0                         | 0                       |  |
| 22                                 | 0                       | 0                         | 0                       |  |
| 23                                 | 0                       | 0                         | 0                       |  |
| 24                                 | 0                       | 0                         | 0                       |  |
| 25                                 | 0                       | 0                         | 0                       |  |
| 26                                 | 0                       | 0                         | 0                       |  |
| 27                                 | 0                       | 0                         | 0                       |  |
| 28                                 | 0                       | 0                         | 0                       |  |
| 29                                 | 0                       | 0                         | 0                       |  |
| 30                                 | 0                       | 0                         | 0                       |  |

|                                                     |                        |                        |
|-----------------------------------------------------|------------------------|------------------------|
| Observer's Name (Print)<br><b>MARK K. LOECHELT</b>  |                        | Date<br><b>4/27/99</b> |
| Observer's Signature<br><i>Mark K. Lochelt</i>      |                        |                        |
| Organization<br><b>ST. JOHNS RIVER POWER PARK</b>   |                        |                        |
| Certified By<br><b>EASTERN TECHNICAL ASSOCIATES</b> | Date<br><b>12/3/98</b> |                        |



EPA

## VISIBLE EMISSION OBSERVATION FORM 1

Method Used (Circle One) Method 2 203A 203B Other: \_\_\_\_\_

Company Name  
ST. JOHNS RIVER POWER PARK  
Facility Name  
ST. JOHNS RIVER POWER PARK  
Street Address  
11201 NEW BELLIN ROAD  
City  
JACKSONVILLE State  
FL Zip  
32226

Process  
LIMESTONE RECLAIM Unit #  
COM Operating Mode  
Control Equipment  
BAGHOUSE 3DC-01 Operating Mode  
100% CAPACITY

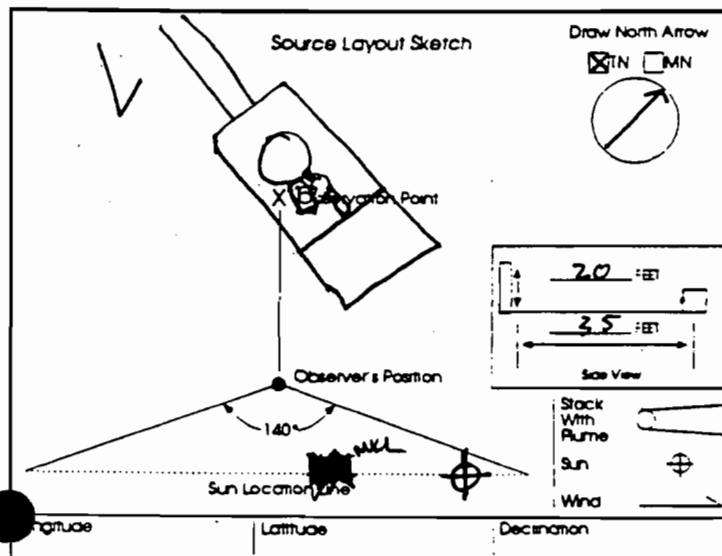
Describe Emission Point  
BAGHOUSE EFFLUENT EXHAUST 3DC-01

Height of Emiss. Pt.  
Start 20' End 20' Height of Emiss. Pt. Rel. to Observer  
Start 14' End 14'  
Distance to Emiss. Pt.  
Start 35' End 35' Direction to Emiss. Pt. (Degrees)  
Start 280° End 280°

Vertical Angle to Obs. Pt.  
Start 17° End 17° Direction to Obs. Pt. (Degrees)  
Start 294° End 294°  
Distance and Direction to Observation Point from Emission Point  
Start 1'-196° End 1'-196°

Describe Emissions  
Start NONE End NONE  
Emission Color  
Start NONE End NONE Water Droplet Plume  
Attached ☐ Detached ☐ None ☒

Describe Plume Background  
Start BAGHOUSE HOUSING End BAGHOUSE HOUSING  
Background Color  
Start RUST End RUST Sky Conditions  
Start OVERCAST End OVERCAST  
Wind Speed  
Start 20-25 End 20-25 Wind Direction  
Start 320° End 320°  
Ambient Temp.  
Start 54° End 54° Wet Bulb Temp.  
Start 55° End 100% RH Percent



Additional Information

Form Number 00501 Page 1 of 2  
Continued on VEO Form Number 00502

| Observation Date<br><u>4/30/99</u> |     | Time Zone<br><u>EST</u> |    |    |    | Start Time<br><u>0750</u> | End Time<br><u>0850</u> |
|------------------------------------|-----|-------------------------|----|----|----|---------------------------|-------------------------|
| Sec                                | Min | 0                       | 15 | 30 | 45 | Comments                  |                         |
| 1                                  | 0   | 0                       | 0  | 0  | 0  |                           |                         |
| 2                                  | 0   | 0                       | 0  | 0  | 0  |                           |                         |
| 3                                  | 0   | 0                       | 0  | 0  | 0  |                           |                         |
| 4                                  | 0   | 0                       | 0  | 0  | 0  |                           |                         |
| 5                                  | 0   | 0                       | 0  | 0  | 0  |                           |                         |
| 6                                  | 0   | 0                       | 0  | 0  | 0  |                           |                         |
| 7                                  | 0   | 0                       | 0  | 0  | 0  |                           |                         |
| 8                                  | 0   | 0                       | 0  | 0  | 0  |                           |                         |
| 9                                  | 0   | 0                       | 0  | 0  | 0  |                           |                         |
| 10                                 | 0   | 0                       | 0  | 0  | 0  |                           |                         |
| 11                                 | 0   | 0                       | 0  | 0  | 0  |                           |                         |
| 12                                 | 0   | 0                       | 0  | 0  | 0  |                           |                         |
| 13                                 | 0   | 0                       | 0  | 0  | 0  |                           |                         |
| 14                                 | 0   | 0                       | 0  | 0  | 0  |                           |                         |
| 15                                 | 0   | 0                       | 0  | 0  | 0  |                           |                         |
| 16                                 | 0   | 0                       | 0  | 0  | 0  |                           |                         |
| 17                                 | 0   | 0                       | 0  | 0  | 0  |                           |                         |
| 18                                 | 0   | 0                       | 0  | 0  | 0  |                           |                         |
| 19                                 | 0   | 0                       | 0  | 0  | 0  |                           |                         |
| 20                                 | 0   | 0                       | 0  | 0  | 0  |                           |                         |
| 21                                 | 0   | 0                       | 0  | 0  | 0  |                           |                         |
| 22                                 | 0   | 0                       | 0  | 0  | 0  |                           |                         |
| 23                                 | 0   | 0                       | 0  | 0  | 0  |                           |                         |
| 24                                 | 0   | 0                       | 0  | 0  | 0  |                           |                         |
| 25                                 | 0   | 0                       | 0  | 0  | 0  |                           |                         |
| 26                                 | 0   | 0                       | 0  | 0  | 0  |                           |                         |
| 27                                 | 0   | 0                       | 0  | 0  | 0  |                           |                         |
| 28                                 | 0   | 0                       | 0  | 0  | 0  |                           |                         |
| 29                                 | 0   | 0                       | 0  | 0  | 0  |                           |                         |
| 30                                 | 0   | 0                       | 0  | 0  | 0  |                           |                         |

Observer's Name (Print)  
MARK K. LOECHELT  
Observer's Signature  
Mark K. Lochelt Date  
4/30/99  
Organization  
ST. JOHNS RIVER POWER PARK  
Certified By  
EASTERN TECHNICAL ASSOCIATES Date  
12/3/98

EPA

## VISIBLE EMISSION OBSERVATION FORM 1

|                          |      |      |              |
|--------------------------|------|------|--------------|
| Method Used (Circle One) | 203A | 203B | Other: _____ |
| Method 9                 |      |      |              |

|                            |       |       |
|----------------------------|-------|-------|
| Company Name               |       |       |
| ST. JOHNS RIVER POWER PARK |       |       |
| Facility Name              |       |       |
| ST. JOHNS RIVER POWER PARK |       |       |
| Street Address             |       |       |
| 11201 NEW BERLIN ROAD      |       |       |
| City                       | State | Zip   |
| JACKSONVILLE               | FL    | 32226 |

|                   |        |                |
|-------------------|--------|----------------|
| Process           | Unit # | Operating Mode |
| LIMESTONE RECLAIM | COM    |                |
| Control Equipment |        | Operating Mode |
| BAGHOUSE 3DC-01   |        | 100% CAPACITY  |

|                                  |  |
|----------------------------------|--|
| Describe Emission Point          |  |
| BAGHOUSE EFFLUENT EXHAUST 3DC-01 |  |

|                        |                                       |
|------------------------|---------------------------------------|
| Height of Emiss. Pt.   | Height of Emiss. Pt. Rel. to Observer |
| Start End              | Start End                             |
| Distance to Emiss. Pt. | Direction to Emiss. Pt. (Degrees)     |
| Start End              | Start End                             |

|                                                                 |                                 |
|-----------------------------------------------------------------|---------------------------------|
| Vertical Angle to Obs. Pt.                                      | Direction to Obs. Pt. (Degrees) |
| Start End                                                       | Start End                       |
| Distance and Direction to Observation Point from Emission Point |                                 |
| Start End                                                       | Start End                       |

|                    |                                                                                                   |
|--------------------|---------------------------------------------------------------------------------------------------|
| Describe Emissions |                                                                                                   |
| Start              | End                                                                                               |
| Emission Color     | Water Droplet Plume                                                                               |
| Start End          | Attached <input type="checkbox"/> Detached <input type="checkbox"/> None <input type="checkbox"/> |

|                           |                |
|---------------------------|----------------|
| Describe Plume Background |                |
| Start                     | End            |
| Background Color          | Sky Conditions |
| Start End                 | Start End      |
| Wind Speed                | Wind Direction |
| Start End                 | Start End      |
| Ambient Temp.             | Wet Bulb Temp. |
| Start End                 | RH Percent     |

|                      |          |                                                         |
|----------------------|----------|---------------------------------------------------------|
| Source Layout Sketch |          | Draw North Arrow                                        |
|                      |          | <input type="checkbox"/> TN <input type="checkbox"/> MN |
|                      |          |                                                         |
|                      |          |                                                         |
| Longitude            | Latitude | Declination                                             |

|                        |  |
|------------------------|--|
| Additional Information |  |
|                        |  |

|                              |       |       |        |
|------------------------------|-------|-------|--------|
| Form Number                  | 00502 | Page  | 2 of 2 |
| Continued on VEO Form Number |       | 00501 |        |

|                  |           |            |          |
|------------------|-----------|------------|----------|
| Observation Date | Time Zone | Start Time | End Time |
| 4/30/99          | EST       | 0750       | 0850     |
| Sec Min          | 0         | 15         | 30       |
|                  | 45        | Comments   |          |
| 1                | 0         | 0          | 0        |
| 2                | 0         | 0          | 0        |
| 3                | 0         | 0          | 0        |
| 4                | 0         | 0          | 0        |
| 5                | 0         | 0          | 0        |
| 6                | 0         | 0          | 0        |
| 7                | 0         | 0          | 0        |
| 8                | 0         | 0          | 0        |
| 9                | 0         | 0          | 0        |
| 10               | 0         | 0          | 0        |
| 11               | 0         | 0          | 0        |
| 12               | 0         | 0          | 0        |
| 13               | 0         | 0          | 0        |
| 14               | 0         | 0          | 0        |
| 15               | 0         | 0          | 0        |
| 16               | 0         | 0          | 0        |
| 17               | 0         | 0          | 0        |
| 18               | 0         | 0          | 0        |
| 19               | 0         | 0          | 0        |
| 20               | 0         | 0          | 0        |
| 21               | 0         | 0          | 0        |
| 22               | 0         | 0          | 0        |
| 23               | 0         | 0          | 0        |
| 24               | 0         | 0          | 0        |
| 25               | 0         | 0          | 0        |
| 26               | 0         | 0          | 0        |
| 27               | 0         | 0          | 0        |
| 28               | 0         | 0          | 0        |
| 29               | 0         | 0          | 0        |
| 30               | 0         | 0          | 0        |

|                              |         |
|------------------------------|---------|
| Observer's Name (Print)      |         |
| MARK K. LOECHLIT             |         |
| Observer's Signature         | Date    |
| Mark K. Loechlit             | 4/30/99 |
| Organization                 |         |
| ST. JOHNS RIVER POWER PARK   |         |
| Certified By                 | Date    |
| EASTERN TECHNICAL ASSOCIATES | 12/3/98 |

EPA

## VISIBLE EMISSION OBSERVATION FORM 1

Method Used (Circle One)  
Method 9 203A 203B Other: \_\_\_\_\_

Company Name  
**St. Johns River Power Park**

Facility Name  
**St. Johns River Power Park.**

Street Address  
**11201 New Berlin Rd.**

City  
**Jacksonville** State  
**FL** Zip  
**32226**

Process  
**Fuel Transfer Building.** Unit # \_\_\_\_\_ Operating Mode  
**2000 TPH**

Control Equipment  
**WET suppression** Operating Mode  
**100% CAP.**

Describe Emission Point  
**Conveyor C-1 to Conveyor G-2 and  
lowering Well.**

Height of Emiss. Pt.  
Start **130'** End **130'** Height of Emiss. Pt. Rel. to Observer  
Start **127'** End **121'**

Distance to Emiss. Pt.  
Start **230'** End **230'** Direction to Emiss. Pt. (Degrees)  
Start **275°** End **275°**

Vertical Angle to Obs. Pt.  
Start **16°** End **16°** Direction to Obs. Pt. (Degrees)  
Start **270°** End **270°**

Distance and Direction to Observation Point from Emission Point  
Start **10' 90°** End **10' 90°**

Describe Emissions  
Start **none** End **none.**

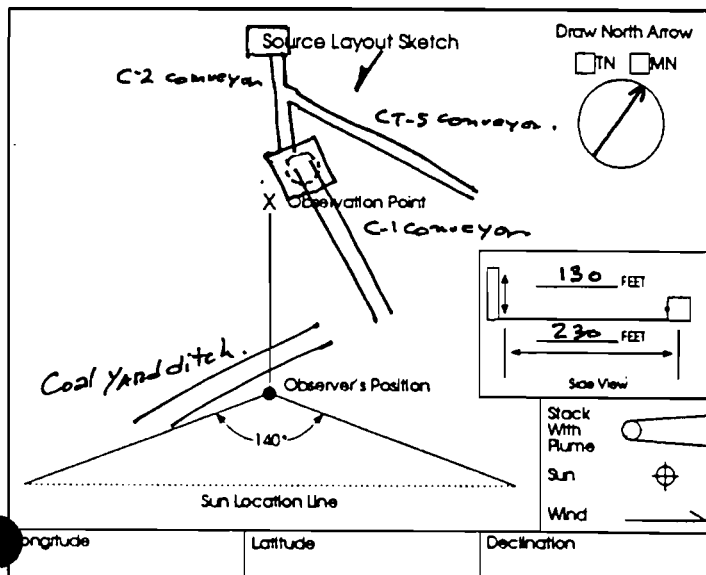
Emission Color  
Start **none** End **none** Water Droplet Plume  
Attached ☐ Detached ☐ None ☒

Describe Plume Background  
Start **open sky** End **open sky.**

Background Color  
Start **GRAY** End **GRAY** Sky Conditions  
Start **overcast** End **overcast**

Wind Speed  
Start **20-25** End **20-25** Wind Direction  
Start **N** End **N**

Ambient Temp.  
Start **53°F** End **54°F** Wet Bulb Temp.  
**53°F** RH Percent  
**100%**



Additional Information  
**Directions estimated - erratic compass readings.**

Form Number **23001** Page **1** of **2**

Continued on VEO Form Number **23002**

| Observation Date<br><b>5/1/99</b> |   | Time Zone |    | Start Time<br><b>0725</b> | End Time<br><b>0825</b> |
|-----------------------------------|---|-----------|----|---------------------------|-------------------------|
| Sec<br>Min                        | 0 | 15        | 30 | 45                        | Comments                |
| 1                                 | 0 | 0         | 0  | 0                         |                         |
| 2                                 | 0 | 0         | 0  | 0                         |                         |
| 3                                 | 0 | 0         | 0  | 0                         |                         |
| 4                                 | 0 | 0         | 0  | 0                         |                         |
| 5                                 | 0 | 0         | 0  | 0                         |                         |
| 6                                 | 0 | 0         | 0  | 0                         |                         |
| 7                                 | 0 | 0         | 0  | 0                         |                         |
| 8                                 | 0 | 0         | 0  | 0                         |                         |
| 9                                 | 0 | 0         | 0  | 0                         |                         |
| 10                                | 0 | 0         | 0  | 0                         |                         |
| 11                                | 0 | 0         | 0  | 0                         |                         |
| 12                                | 0 | 0         | 0  | 0                         |                         |
| 13                                | 0 | 0         | 0  | 0                         |                         |
| 14                                | 0 | 0         | 0  | 0                         |                         |
| 15                                | 0 | 0         | 0  | 0                         |                         |
| 16                                | 0 | 0         | 0  | 0                         |                         |
| 17                                | 0 | 0         | 0  | 0                         |                         |
| 18                                | 0 | 0         | 0  | 0                         |                         |
| 19                                | 0 | 0         | 0  | 0                         |                         |
| 20                                | 0 | 0         | 0  | 0                         |                         |
| 21                                | 0 | 0         | 0  | 0                         |                         |
| 22                                | 0 | 0         | 0  | 0                         |                         |
| 23                                | 0 | 0         | 0  | 0                         |                         |
| 24                                | 0 | 0         | 0  | 0                         |                         |
| 25                                | 0 | 0         | 0  | 0                         |                         |
| 26                                | 0 | 0         | 0  | 0                         |                         |
| 27                                | 0 | 0         | 0  | 0                         |                         |
| 28                                | 0 | 0         | 0  | 0                         |                         |
| 29                                | 0 | 0         | 0  | 0                         |                         |
| 30                                | 0 | 0         | 0  | 0                         |                         |

Observer's Name (Print)  
**Alvaro Castro**

Observer's Signature  
**Alvaro Castro** Date  
**5/1/99**

Organization  
**St. Johns River Power Park.**

Certified By  
**Eastern Technical Associates** Date  
**12/2/98**

EPA

## VISIBLE EMISSION OBSERVATION FORM 1

|                          |      |      |       |
|--------------------------|------|------|-------|
| Method Used (Circle One) | 203A | 203B | Other |
| Method 9                 |      |      |       |

|                |                             |       |  |
|----------------|-----------------------------|-------|--|
| Company Name   | St. Johns River Power Park. |       |  |
| Facility Name  | St. Johns River Power Park. |       |  |
| Street Address | 11201 New Berlin Rd.        |       |  |
| City           | State                       | Zip   |  |
| Jacksonville   | FL                          | 32226 |  |

|                        |        |                |
|------------------------|--------|----------------|
| Process                | Unit # | Operating Mode |
| Fuel Transfer Building | Com    | 2000 TON.      |
| Control Equipment      |        | Operating Mode |
| WET suppression        |        | 100% CAP.      |

|                         |     |                                       |     |
|-------------------------|-----|---------------------------------------|-----|
| Describe Emission Point |     |                                       |     |
|                         |     |                                       |     |
| Height of Emiss. Pt.    |     | Height of Emiss. Pt. Rel. to Observer |     |
| Start                   | End | Start                                 | End |
| Distance to Emiss. Pt.  |     | Direction to Emiss. Pt. (Degrees)     |     |
| Start                   | End | Start                                 | End |

|                                                                 |     |                                 |     |
|-----------------------------------------------------------------|-----|---------------------------------|-----|
| Vertical Angle to Obs. Pt.                                      |     | Direction to Obs. Pt. (Degrees) |     |
| Start                                                           | End | Start                           | End |
| Distance and Direction to Observation Point from Emission Point |     |                                 |     |
| Start                                                           | End |                                 |     |

|                    |                     |                               |                          |
|--------------------|---------------------|-------------------------------|--------------------------|
| Describe Emissions |                     |                               |                          |
| Start              | End                 |                               |                          |
| Emission Color     | Water Droplet Plume |                               |                          |
| Start              | End                 | Attached                      | Detached                 |
|                    |                     | <input type="checkbox"/>      | <input type="checkbox"/> |
|                    |                     | None <input type="checkbox"/> |                          |

|                           |                |       |            |
|---------------------------|----------------|-------|------------|
| Describe Plume Background |                |       |            |
| Start                     | End            |       |            |
| Background Color          | Sky Conditions |       |            |
| Start                     | End            | Start | End        |
| Wind Speed                | Wind Direction |       |            |
| Start                     | End            | Start | End        |
| Ambient Temp.             | Wet Bulb Temp. |       | RH Percent |
| Start                     | End            |       |            |

|                      |          |                                                             |
|----------------------|----------|-------------------------------------------------------------|
| Source Layout Sketch |          | Draw North Arrow                                            |
|                      |          | <input type="checkbox"/> TN <input type="checkbox"/> MN<br> |
| Longitude            | Latitude | Declination                                                 |

|                        |  |
|------------------------|--|
| Additional Information |  |
|                        |  |

|                              |       |       |        |
|------------------------------|-------|-------|--------|
| Form Number                  | 23002 | Page  | 2 of 2 |
| Continued on VEO Form Number |       | 23001 |        |

|                  |           |            |          |  |
|------------------|-----------|------------|----------|--|
| Observation Date | Time Zone | Start Time | End Time |  |
| 5/1/99           |           | 0725       | 0825     |  |
| Sec              | 0         | 15         | 30       |  |
| Min              | 45        | Comments   |          |  |
| 1                | 0         | 0          | 0        |  |
| 2                | 0         | 0          | 0        |  |
| 3                | 0         | 0          | 0        |  |
| 4                | 0         | 0          | 0        |  |
| 5                | 0         | 0          | 0        |  |
| 6                | 0         | 0          | 0        |  |
| 7                | 0         | 0          | 0        |  |
| 8                | 0         | 0          | 0        |  |
| 9                | 0         | 0          | 0        |  |
| 10               | 0         | 0          | 0        |  |
| 11               | 0         | 0          | 0        |  |
| 12               | 0         | 0          | 0        |  |
| 13               | 0         | 0          | 0        |  |
| 14               | 0         | 0          | 0        |  |
| 15               | 0         | 0          | 0        |  |
| 16               | 0         | 0          | 0        |  |
| 17               | 0         | 0          | 0        |  |
| 18               | 0         | 0          | 0        |  |
| 19               | 0         | 0          | 0        |  |
| 20               | 0         | 0          | 0        |  |
| 21               | 0         | 0          | 0        |  |
| 22               | 0         | 0          | 0        |  |
| 23               | 0         | 0          | 0        |  |
| 24               | 0         | 0          | 0        |  |
| 25               | 0         | 0          | 0        |  |
| 26               | 0         | 0          | 0        |  |
| 27               | 0         | 0          | 0        |  |
| 28               | 0         | 0          | 0        |  |
| 29               | 0         | 0          | 0        |  |
| 30               | 0         | 0          | 0        |  |

|                         |                              |
|-------------------------|------------------------------|
| Observer's Name (Print) | Alvaro Castro                |
| Observer's Signature    | Alvaro Castro                |
| Organization            | St. Johns River Power Park.  |
| Certified By            | Eastern Technical Associates |
| Date                    | 5/1/99                       |
| Date                    | 12/2/98                      |

EPA

## VISIBLE EMISSION OBSERVATION FORM 1

|                          |      |      |              |
|--------------------------|------|------|--------------|
| Method Used (Circle One) | 203A | 203B | Other: _____ |
|--------------------------|------|------|--------------|

|                                             |             |              |
|---------------------------------------------|-------------|--------------|
| Company Name<br>ST. JOHNS RIVER POWER PARK  |             |              |
| Facility Name<br>ST. JOHNS RIVER POWER PARK |             |              |
| Street Address<br>11201 NEW BELLW ROAD      |             |              |
| City<br>JACKSONVILLE                        | State<br>FL | Zip<br>32226 |

|                                      |                                 |                            |
|--------------------------------------|---------------------------------|----------------------------|
| Process<br>RAILCAR COAL UNLOADING    | Unit #<br>COM                   | Operating Mode<br>2000 TPH |
| Control Equipment<br>WBT SUPPRESSION | Operating Mode<br>100% CAPACITY |                            |

|                                                                          |  |                                                            |  |
|--------------------------------------------------------------------------|--|------------------------------------------------------------|--|
| Describe Emission Point<br>BUILDING VENTILATOR - STACK @ TOP OF BUILDING |  |                                                            |  |
| Height of Emiss. Pt.<br>Start 60' End 60'                                |  | Height of Emiss. Pt. Rel. to Observer<br>Start 55' End 55' |  |
| Distance to Emiss. Pt.<br>Start 75' End 75'                              |  | Direction to Emiss. Pt. (Degrees)<br>Start 280° End 280°   |  |

|                                                                                                                      |  |                                                        |  |
|----------------------------------------------------------------------------------------------------------------------|--|--------------------------------------------------------|--|
| Vertical Angle to Obs. Pt.<br>Start 24° End 24°                                                                      |  | Direction to Obs. Pt. (Degrees)<br>Start 280° End 280° |  |
| Distance and Direction to Observation Point from Emission Point<br>Start 1' ABOVE STACK - 0° End 1' ABOVE STACK - 0° |  |                                                        |  |

|                    |          |                                   |                                                                            |
|--------------------|----------|-----------------------------------|----------------------------------------------------------------------------|
| Describe Emissions |          |                                   |                                                                            |
| Start NONE         | End NONE | Water Droplet Plume               |                                                                            |
| Start NONE         | End NONE | Attached <input type="checkbox"/> | Detached <input type="checkbox"/> None <input checked="" type="checkbox"/> |

|                           |              |                |                |
|---------------------------|--------------|----------------|----------------|
| Describe Plume Background |              |                |                |
| Start OPEN SKY            | End OPEN SKY | Sky Conditions |                |
| Start GRAY                | End GRAY     | Start OVERCAST | End OVERCAST   |
| Wind Speed                | Start 20-25  | End 20-25      | Wind Direction |
| Ambient Temp.             | Start 53°    | End 54°        | Wet Bulb Temp. |
|                           |              |                | RH Percent     |
|                           |              |                | 100%           |

|                      |          |                                                                                       |
|----------------------|----------|---------------------------------------------------------------------------------------|
| Source Layout Sketch |          | Draw North Arrow<br><input checked="" type="checkbox"/> N <input type="checkbox"/> MN |
|                      |          |                                                                                       |
|                      |          |                                                                                       |
| Longitude            | Latitude | Declination                                                                           |

|                                                                           |
|---------------------------------------------------------------------------|
| Additional Information<br>DIRECTIONS ESTIMATED - BEARING COMPASS READINGS |
|---------------------------------------------------------------------------|

|                              |       |       |        |
|------------------------------|-------|-------|--------|
| Form Number                  | 023a1 | Page  | 1 of 2 |
| Continued on VEO Form Number |       | 023a2 |        |

|                  |        |           |     |            |          |          |      |
|------------------|--------|-----------|-----|------------|----------|----------|------|
| Observation Date | 5-1-99 | Time Zone | EDT | Start Time | 0730     | End Time | 0830 |
| Sec              | 0      | 15        | 30  | 45         | Comments |          |      |
| Mn               | 0      | 0         | 0   | 0          |          |          |      |
| 1                | 0      | 0         | 0   | 0          |          |          |      |
| 2                | 0      | 0         | 0   | 0          |          |          |      |
| 3                | 0      | 0         | 0   | 0          |          |          |      |
| 4                | 0      | 0         | 0   | 0          |          |          |      |
| 5                | 0      | 0         | 0   | 0          |          |          |      |
| 6                | 0      | 0         | 0   | 0          |          |          |      |
| 7                | 0      | 0         | 0   | 0          |          |          |      |
| 8                | 0      | 0         | 0   | 0          |          |          |      |
| 9                | 0      | 0         | 0   | 0          |          |          |      |
| 10               | 0      | 0         | 0   | 0          |          |          |      |
| 11               | 0      | 0         | 0   | 0          |          |          |      |
| 12               | 0      | 0         | 0   | 0          |          |          |      |
| 13               | 0      | 0         | 0   | 0          |          |          |      |
| 14               | 0      | 0         | 0   | 0          |          |          |      |
| 15               | 0      | 0         | 0   | 0          |          |          |      |
| 16               | 0      | 0         | 0   | 0          |          |          |      |
| 17               | 0      | 0         | 0   | 0          |          |          |      |
| 18               | 0      | 0         | 0   | 0          |          |          |      |
| 19               | 0      | 0         | 0   | 0          |          |          |      |
| 20               | 0      | 0         | 0   | 0          |          |          |      |
| 21               | 0      | 0         | 0   | 0          |          |          |      |
| 22               | 0      | 0         | 0   | 0          |          |          |      |
| 23               | 0      | 0         | 0   | 0          |          |          |      |
| 24               | 0      | 0         | 0   | 0          |          |          |      |
| 25               | 0      | 0         | 0   | 0          |          |          |      |
| 26               | 0      | 0         | 0   | 0          |          |          |      |
| 27               | 0      | 0         | 0   | 0          |          |          |      |
| 28               | 0      | 0         | 0   | 0          |          |          |      |
| 29               | 0      | 0         | 0   | 0          |          |          |      |
| 30               | 0      | 0         | 0   | 0          |          |          |      |

|                         |                              |      |         |
|-------------------------|------------------------------|------|---------|
| Observer's Name (Print) | MARK K. LOECHLT              | Date | 5/1/99  |
| Observer's Signature    | Mark K. Loechlt              |      |         |
| Organization            | ST. JOHNS RIVER POWER PARK   |      |         |
| Certified By            | EASTERN TECHNICAL ASSOCIATES | Date | 12/3/98 |

EPA

## VISIBLE EMISSION OBSERVATION FORM 1

Method Used (Circle One) Method 9 203A 203B Other: \_\_\_\_\_

Company Name  
ST. JOHNS RIVER POWER PARK

Facility Name  
ST. JOHNS RIVER POWER PARK

Street Address  
11201 NEW BELLIN ROAD

City JACKSONVILLE State FL Zip 32226

Process RAILCAR COAL UNLOADING Unit # COM Operating Mode  
Control Equipment WRT SUPPRESSION Operating Mode 100% CAPACITY

Describe Emission Point  
BUILDING VENTILATOR - STACK @ TOP OF BUILDING

Height of Emiss. Pt. Start \_\_\_\_\_ End \_\_\_\_\_ Height of Emiss. Pt. Rel. to Observer Start \_\_\_\_\_ End \_\_\_\_\_  
Distance to Emiss. Pt. Start \_\_\_\_\_ End \_\_\_\_\_ Direction to Emiss. Pt. (Degrees) Start \_\_\_\_\_ End \_\_\_\_\_

Vertical Angle to Obs. Pt. Start \_\_\_\_\_ End \_\_\_\_\_ Direction to Obs. Pt. (Degrees) Start \_\_\_\_\_ End \_\_\_\_\_  
Distance and Direction to Observation Point from Emission Point Start \_\_\_\_\_ End \_\_\_\_\_

Describe Emissions  
Start \_\_\_\_\_ End \_\_\_\_\_ Emission Color \_\_\_\_\_ Water Droplet Plume  
Start \_\_\_\_\_ End \_\_\_\_\_ Attached ☐ Detached ☐ None ☐

Describe Plume Background  
Start \_\_\_\_\_ End \_\_\_\_\_ Background Color \_\_\_\_\_ Sky Conditions  
Start \_\_\_\_\_ End \_\_\_\_\_ Wind Speed \_\_\_\_\_ Wind Direction  
Start \_\_\_\_\_ End \_\_\_\_\_ Ambient Temp. \_\_\_\_\_ Wet Bulb Temp. \_\_\_\_\_ RH Percent  
Start \_\_\_\_\_ End \_\_\_\_\_

Source Layout Sketch

Draw North Arrow ☐ TN ☐ MN

Observer's Position

Observation Point

Sun Location Line

Wind

Stack With Plume

Scale View

Longitude \_\_\_\_\_ Latitude \_\_\_\_\_ Declination \_\_\_\_\_

Additional Information

Form Number 023a2 Page 2 of 2  
Continued on VEO Form Number 023a1

| Observation Date |   |    | Time Zone |    | Start Time | End Time |
|------------------|---|----|-----------|----|------------|----------|
| Sec<br>Min       | 0 | 15 | 30        | 45 | Comments   |          |
| 1                | 0 | 0  | 0         | 0  |            |          |
| 2                | 0 | 0  | 0         | 0  |            |          |
| 3                | 0 | 0  | 0         | 0  |            |          |
| 4                | 0 | 0  | 0         | 0  |            |          |
| 5                | 0 | 0  | 0         | 0  |            |          |
| 6                | 0 | 0  | 0         | 0  |            |          |
| 7                | 0 | 0  | 0         | 0  |            |          |
| 8                | 0 | 0  | 0         | 0  |            |          |
| 9                | 0 | 0  | 0         | 0  |            |          |
| 10               | 0 | 0  | 0         | 0  |            |          |
| 11               | 0 | 0  | 0         | 0  |            |          |
| 12               | 0 | 0  | 0         | 0  |            |          |
| 13               | 0 | 0  | 0         | 0  |            |          |
| 14               | 0 | 0  | 0         | 0  |            |          |
| 15               | 0 | 0  | 0         | 0  |            |          |
| 16               | 0 | 0  | 0         | 0  |            |          |
| 17               | 0 | 0  | 0         | 0  |            |          |
| 18               | 0 | 0  | 0         | 0  |            |          |
| 19               | 0 | 0  | 0         | 0  |            |          |
| 20               | 0 | 0  | 0         | 0  |            |          |
| 21               | 0 | 0  | 0         | 0  |            |          |
| 22               | 0 | 0  | 0         | 0  |            |          |
| 23               | 0 | 0  | 0         | 0  |            |          |
| 24               | 0 | 0  | 0         | 0  |            |          |
| 25               | 0 | 0  | 0         | 0  |            |          |
| 26               | 0 | 0  | 0         | 0  |            |          |
| 27               | 0 | 0  | 0         | 0  |            |          |
| 28               | 0 | 0  | 0         | 0  |            |          |
| 29               | 0 | 0  | 0         | 0  |            |          |
| 30               | 0 | 0  | 0         | 0  |            |          |

Observer's Name (Print) MARK K. LOECHLT  
Observer's Signature Mark K. Loechlt Date 5/1/99  
Organization ST. JOHNS RIVER POWER PARK  
Certified by EASTERN TECHNICAL ASSOCIATES Date 12/3/98

EPA

## VISIBLE EMISSION OBSERVATION FORM 1

 Method (Circle One) Method 9 203A 203B Other: \_\_\_\_\_

 Company Name  
ST. JOHNS RIVER POWER PARK  
 Facility Name  
ST. JOHNS RIVER POWER PARK  
 Street Address  
11201 NEW BERLIN ROAD  
 City JACKSONVILLE State FL Zip 32226

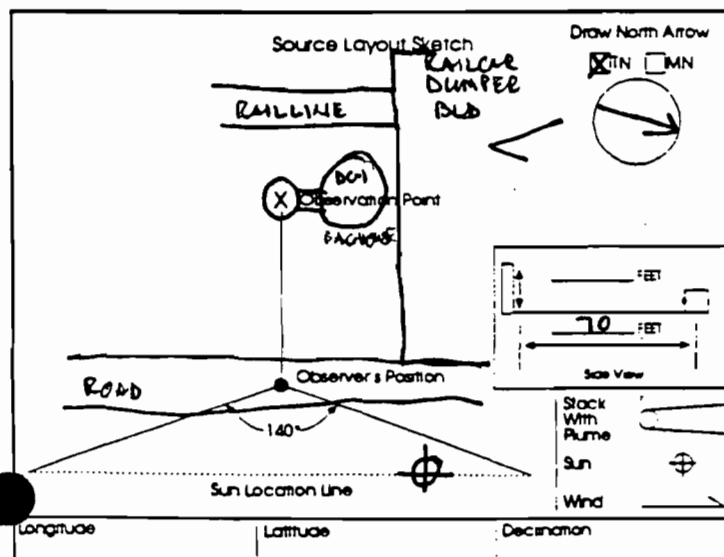
 Process RAILCAR COAL UNLOADING Unit # COM Operating Mode 2000 TPH  
 Control Equipment DC-1 DUST COLLECTOR Operating Mode 100% CAPACITY

 Describe Emission Point  
DC-1 DUST COLLECTOR EFFLUENT EXHAUST

 Height of Emiss. Pt.  
 Start 32' End 32' Height of Emiss. Pt. Rel. to Observer  
 Start 27' End 27'  
 Distance to Emiss. Pt.  
 Start 70' End 70' Direction to Emiss. Pt. (Degrees)  
 Start 256° End 256°

 Vertical Angle to Obs. Pt.  
 Start 14° End 14° Direction to Obs. Pt. (Degrees)  
 Start 256° End 256°  
 Distance and Direction to Observation Point from Emission Point  
 Start 1' ABOVE STACK - 0° End 1' ABOVE STACK 0°

 Describe Emissions  
 Start MOVE End MOVE  
 Emission Color  
 Start MOVE End MOVE Water Droplet Plume  
 Attached ☐ Detached ☐ None ☒

 Describe Plume Background  
 Start OPEN SKY End OPEN SKY  
 Background Color  
 Start GRAY End GRAY Sky Conditions  
 Start OVERCAST End OVERCAST  
 Wind Speed  
 Start 20-25 End 20-25 Wind Direction  
 Start 340° End 340°  
 Ambient Temp.  
 Start 53° End 54° Wet Bulb Temp.  
 Start 53° End 100% RH Percent

 Additional Information  
DIRECTIONS ESTIMATED - ERRATIC COMPASS READINGS

 Form Number 00431 Page 1 of 2  
 Continued on VEO Form Number 00432

| Observation Date |   | Time Zone |    | Start Time | End Time |
|------------------|---|-----------|----|------------|----------|
| 5-1-99           |   | EDT       |    | 0730       | 0830     |
| Sec<br>Min       | 0 | 15        | 30 | 45         | Comments |
| 1                | 0 | 0         | 0  | 0          |          |
| 2                | 0 | 0         | 0  | 0          |          |
| 3                | 0 | 0         | 0  | 0          |          |
| 4                | 0 | 0         | 0  | 0          |          |
| 5                | 0 | 0         | 0  | 0          |          |
| 6                | 0 | 0         | 0  | 0          |          |
| 7                | 0 | 0         | 0  | 0          |          |
| 8                | 0 | 0         | 0  | 0          |          |
| 9                | 0 | 0         | 0  | 0          |          |
| 10               | 0 | 0         | 0  | 0          |          |
| 11               | 0 | 0         | 0  | 0          |          |
| 12               | 0 | 0         | 0  | 0          |          |
| 13               | 0 | 0         | 0  | 0          |          |
| 14               | 0 | 0         | 0  | 0          |          |
| 15               | 0 | 0         | 0  | 0          |          |
| 16               | 0 | 0         | 0  | 0          |          |
| 17               | 0 | 0         | 0  | 0          |          |
| 18               | 0 | 0         | 0  | 0          |          |
| 19               | 0 | 0         | 0  | 0          |          |
| 20               | 0 | 0         | 0  | 0          |          |
| 21               | 0 | 0         | 0  | 0          |          |
| 22               | 0 | 0         | 0  | 0          |          |
| 23               | 0 | 0         | 0  | 0          |          |
| 24               | 0 | 0         | 0  | 0          |          |
| 25               | 0 | 0         | 0  | 0          |          |
| 26               | 0 | 0         | 0  | 0          |          |
| 27               | 0 | 0         | 0  | 0          |          |
| 28               | 0 | 0         | 0  | 0          |          |
| 29               | 0 | 0         | 0  | 0          |          |
| 30               | 0 | 0         | 0  | 0          |          |

 Observer's Name (Print)  
MARK K. LOECHLT  
 Observer's Signature  
Mark K. Lochelt Date 5/1/99  
 Organization  
ST. JOHNS RIVER POWER PARK  
 Certified By  
EASTERN TECHNICAL ASSOCIATES Date 12/3/98

EPA

## VISIBLE EMISSION OBSERVATION FORM 1

Method Used (Circle One) Method 9 203A 203B Other: \_\_\_\_\_

Company Name  
ST. JOHNS RIVER POWER PARK

Facility Name  
ST. JOHNS RIVER POWER PARK

Street Address  
11201 NEW BERLIN ROAD

City JACKSONVILLE State FL Zip 32226

Process RAILCAR COAL UNLOADING Unit # COM Operating Mode  
Control Equipment DC-1 DUST COLLECTOR Operating Mode 100% CAPACITY

Describe Emission Point  
DC-1 DUST COLLECTOR EFFLUENT EXHAUST

Height of Emiss. Pt. \_\_\_\_\_ Height of Emiss. Pt. Rel. to Observer \_\_\_\_\_  
Start \_\_\_\_\_ End \_\_\_\_\_ Start \_\_\_\_\_ End \_\_\_\_\_  
Distance to Emiss. Pt. \_\_\_\_\_ Direction to Emiss. Pt. (Degrees) \_\_\_\_\_  
Start \_\_\_\_\_ End \_\_\_\_\_ Start \_\_\_\_\_ End \_\_\_\_\_

Vertical Angle to Obs. Pt. \_\_\_\_\_ Direction to Obs. Pt. (Degrees) \_\_\_\_\_  
Start \_\_\_\_\_ End \_\_\_\_\_ Start \_\_\_\_\_ End \_\_\_\_\_  
Distance and Direction to Observation Point from Emission Point \_\_\_\_\_  
Start \_\_\_\_\_ End \_\_\_\_\_

Describe Emissions  
Start \_\_\_\_\_ End \_\_\_\_\_  
Emission Color \_\_\_\_\_ Water Droplet Plume \_\_\_\_\_  
Start \_\_\_\_\_ End \_\_\_\_\_ Attached ☐ Detached ☐ None ☐

Describe Plume Background  
Start \_\_\_\_\_ End \_\_\_\_\_  
Background Color \_\_\_\_\_ Sky Conditions \_\_\_\_\_  
Start \_\_\_\_\_ End \_\_\_\_\_ Start \_\_\_\_\_ End \_\_\_\_\_  
Wind Speed \_\_\_\_\_ Wind Direction \_\_\_\_\_  
Start \_\_\_\_\_ End \_\_\_\_\_ Start \_\_\_\_\_ End \_\_\_\_\_  
Ambient Temp. \_\_\_\_\_ Wet Bulb Temp. \_\_\_\_\_ RH Percent \_\_\_\_\_  
Start \_\_\_\_\_ End \_\_\_\_\_

Source Layout Sketch

Draw North Arrow  
☐ TN ☐ MN

Observer's Position

Observation Point

Sun Location Line

Wind

Longitude \_\_\_\_\_ Latitude \_\_\_\_\_ Declination \_\_\_\_\_

Additional Information

Form Number 00432 Page 2 of 2  
Continued on VEO Form Number 00431

| Observation Date |   | Time Zone |    |    | Start Time | End Time |
|------------------|---|-----------|----|----|------------|----------|
| 5/1/99           |   | EST       |    |    | 0730       | 0830     |
| Sec<br>Min       | 0 | 15        | 30 | 45 | Comments   |          |
| 1                | 0 | 0         | 0  | 0  |            |          |
| 2                | 0 | 0         | 0  | 0  |            |          |
| 3                | 0 | 0         | 0  | 0  |            |          |
| 4                | 0 | 0         | 0  | 0  |            |          |
| 5                | 0 | 0         | 0  | 0  |            |          |
| 6                | 0 | 0         | 0  | 0  |            |          |
| 7                | 0 | 0         | 0  | 0  |            |          |
| 8                | 0 | 0         | 0  | 0  |            |          |
| 9                | 0 | 0         | 0  | 0  |            |          |
| 10               | 0 | 0         | 0  | 0  |            |          |
| 11               | 0 | 0         | 0  | 0  |            |          |
| 12               | 0 | 0         | 0  | 0  |            |          |
| 13               | 0 | 0         | 0  | 0  |            |          |
| 14               | 0 | 0         | 0  | 0  |            |          |
| 15               | 0 | 0         | 0  | 0  |            |          |
| 16               | 0 | 0         | 0  | 0  |            |          |
| 17               | 0 | 0         | 0  | 0  |            |          |
| 18               | 0 | 0         | 0  | 0  |            |          |
| 19               | 0 | 0         | 0  | 0  |            |          |
| 20               | 0 | 0         | 0  | 0  |            |          |
| 21               | 0 | 0         | 0  | 0  |            |          |
| 22               | 0 | 0         | 0  | 0  |            |          |
| 23               | 0 | 0         | 0  | 0  |            |          |
| 24               | 0 | 0         | 0  | 0  |            |          |
| 25               | 0 | 0         | 0  | 0  |            |          |
| 26               | 0 | 0         | 0  | 0  |            |          |
| 27               | 0 | 0         | 0  | 0  |            |          |
| 28               | 0 | 0         | 0  | 0  |            |          |
| 29               | 0 | 0         | 0  | 0  |            |          |
| 30               | 0 | 0         | 0  | 0  |            |          |

Observer's Name (Print) MARK K. LOECHTEL  
Observer's Signature Mark K. Loechtel Date 5/1/99  
Organization ST. JOHNS RIVER POWER PARK  
Certified By EASTERN TECHNICAL ASSOCIATES Date 12/3/98



# Visible Emissions Evaluation Data Sheet

Client TEA Observer Dale Vineyard  
 Project No. 98-18872 Date 10-12-98  
 Plant Name St John River Power Park Observation began 10:15  
 Location Jacksonville FL ended 11:15  
 Type of Facility Power Plant

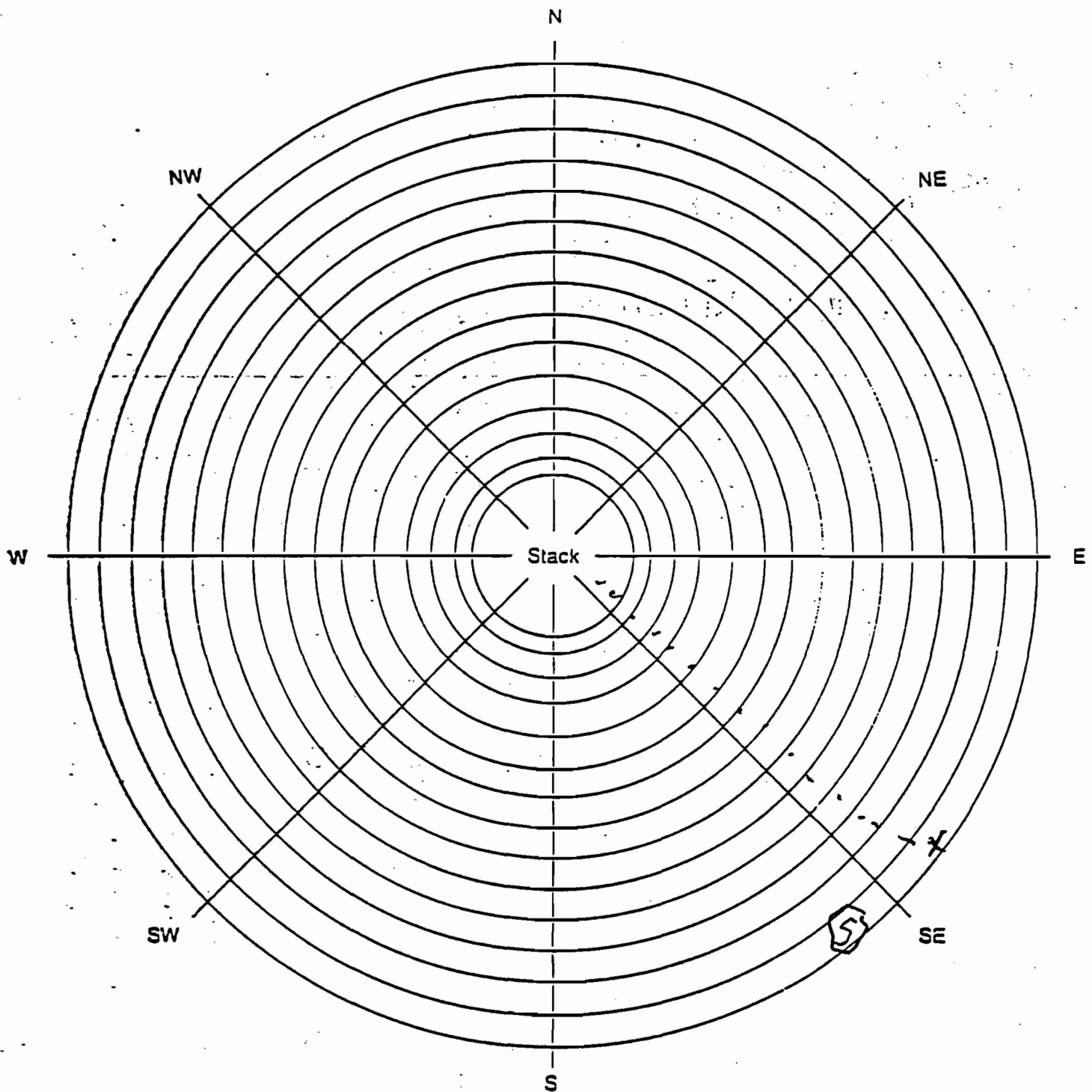
| Source Identification<br>(Stack, Duct, etc.)         | Min. | Seconds |    |    |    | Min. | Seconds |    |    |    |
|------------------------------------------------------|------|---------|----|----|----|------|---------|----|----|----|
|                                                      |      | 0       | 15 | 30 | 45 |      | 0       | 15 | 30 | 45 |
| <u>Loader (Duct at Top)</u>                          | 0    | 0       | 0  | 0  | 0  | 30   | 0       | 0  | 0  | 0  |
|                                                      | 1    | 0       | 0  | 0  | 0  | 31   | 0       | 0  | 0  | 0  |
|                                                      | 2    | 0       | 0  | 0  | 0  | 32   | 0       | 0  | 0  | 0  |
|                                                      | 3    | 0       | 0  | 0  | 0  | 33   | 0       | 0  | 0  | 0  |
| Observer Location<br>(Diagram on back of sheet)      | 4    | 0       | 0  | 0  | 0  | 34   | 0       | 0  | 0  | 0  |
| Distance from Observer to source <u>350'</u>         | 5    | 0       | 0  | 0  | 0  | 35   | 0       | 0  | 0  | 0  |
| Height of Source (above ground) <u>50'</u>           | 6    | 0       | 0  | 0  | 0  | 36   | 0       | 0  | 0  | 0  |
| Weather Conditions                                   | 7    | 0       | 0  | 0  | 0  | 37   | 0       | 0  | 0  | 0  |
| Wind Direction <u>N E</u>                            | 8    | 0       | 0  | 0  | 0  | 38   | 0       | 0  | 0  | 0  |
| Wind Speed <u>5 to 10</u>                            | 9    | 0       | 0  | 0  | 0  | 39   | 0       | 0  | 0  | 0  |
| Temperature <u>72</u>                                | 10   | 0       | 0  | 0  | 0  | 40   | 0       | 0  | 0  | 0  |
| Position of Sun <u>SE</u>                            | 11   | 0       | 0  | 0  | 0  | 41   | 0       | 0  | 0  | 0  |
| Sky Condition <u>overcast</u>                        | 12   | 0       | 0  | 0  | 0  | 42   | 0       | 0  | 0  | 0  |
| (clear, overcast, %clouds,<br>color of clouds, etc.) | 13   | 0       | 0  | 0  | 0  | 43   | 0       | 0  | 0  | 0  |
|                                                      | 14   | 0       | 0  | 0  | 0  | 44   | 0       | 0  | 0  | 0  |
|                                                      | 15   | 0       | 0  | 0  | 0  | 45   | 0       | 0  | 0  | 0  |
| Plume Description <u>White</u>                       | 16   | 0       | 0  | 0  | 0  | 46   | 0       | 0  | 0  | 0  |
| Color <u>White</u>                                   | 17   | 0       | 0  | 0  | 0  | 47   | 0       | 0  | 0  | 0  |
| Background <u>Sky</u>                                | 18   | 0       | 0  | 0  | 0  | 48   | 0       | 0  | 0  | 0  |
| Type (wet or dry) <u>Dry</u> Dist. _____             | 19   | 0       | 0  | 0  | 0  | 49   | 0       | 0  | 0  | 0  |
| Comments _____                                       | 20   | 0       | 0  | 0  | 0  | 50   | 0       | 0  | 0  | 0  |
|                                                      | 21   | 0       | 0  | 0  | 0  | 51   | 0       | 0  | 0  | 0  |
|                                                      | 22   | 0       | 0  | 0  | 0  | 52   | 0       | 0  | 0  | 0  |
|                                                      | 23   | 0       | 0  | 0  | 0  | 53   | 0       | 0  | 0  | 0  |
|                                                      | 24   | 0       | 0  | 0  | 0  | 54   | 0       | 0  | 0  | 0  |
|                                                      | 25   | 0       | 0  | 0  | 0  | 55   | 0       | 0  | 0  | 0  |
| Observers Signature <u>Dale Vineyard</u>             | 26   | 0       | 0  | 0  | 0  | 56   | 0       | 0  | 0  | 0  |
| Date of Last EPA Method 9 Examination <u>10-7-98</u> | 27   | 0       | 0  | 0  | 0  | 57   | 0       | 0  | 0  | 0  |
| Examination Passed in EPA Region <u>Eastern</u>      | 28   | 0       | 0  | 0  | 0  | 58   | 0       | 0  | 0  | 0  |
|                                                      | 29   | 0       | 0  | 0  | 0  | 59   | 0       | 0  | 0  | 0  |

\*If wet, distance (ft.) from plume outlet to point in plume where observations made



Total Source Analysis, Inc.  
Environmental Testing Consultants

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LOCATE THE FOLLOWING ON THE DIAGRAM

1. The stack configuration with the stack under observation in the center
2. Observer's position using X to indicate position.
3. Arrow pointing direction wind is blowing.
4. Dotted line between observer and plume indicating observers line of sight when making readings.
5. Circle with S in center to indicate sun location.
6. Any large structures or significant topographical features.

NOTE: Stack configuration is not proportional to distances in feet from stack in the diagram.



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Environmental Testing Consultants

# Visible Emissions Evaluation Data Sheet

Client TEA Observer Dale Vineyard  
 Project No. 48-198 FL Date 10-12-98  
 Plant Name St. Johns River Community College Observation began 9:00  
 Location St. Johns River Community College ended 10:00  
 Type of Facility Power Plant

| Source Identification<br>(Stack, Duct, etc.) | Min. | Seconds |    |    |    | Min. | Seconds |    |    |    |
|----------------------------------------------|------|---------|----|----|----|------|---------|----|----|----|
|                                              |      | 0       | 15 | 30 | 45 |      | 0       | 15 | 30 | 45 |
| <u>Pile of Lime Rock</u>                     | 0    | 0       | 0  | 0  | 0  | 30   | 0       | 0  | 0  | 0  |
| <u>Lime Stone Handling Building</u>          | 1    | 0       | 0  | 0  | 0  | 31   | 0       | 0  | 0  | 0  |
|                                              | 2    | 0       | 0  | 0  | 0  | 32   | 0       | 0  | 0  | 0  |
|                                              | 3    | 0       | 0  | 0  | 0  | 33   | 0       | 0  | 0  | 0  |
|                                              | 4    | 0       | 0  | 0  | 0  | 34   | 0       | 0  | 0  | 0  |
|                                              | 5    | 0       | 0  | 0  | 0  | 35   | 0       | 0  | 0  | 0  |
|                                              | 6    | 0       | 0  | 0  | 0  | 36   | 0       | 0  | 0  | 0  |
|                                              | 7    | 0       | 0  | 0  | 0  | 37   | 0       | 0  | 0  | 0  |
|                                              | 8    | 0       | 0  | 0  | 0  | 38   | 0       | 0  | 0  | 0  |
|                                              | 9    | 0       | 0  | 0  | 0  | 39   | 0       | 0  | 0  | 0  |
|                                              | 10   | 0       | 0  | 0  | 0  | 40   | 0       | 0  | 0  | 0  |
|                                              | 11   | 0       | 0  | 0  | 0  | 41   | 0       | 0  | 0  | 0  |
|                                              | 12   | 0       | 0  | 0  | 0  | 42   | 0       | 0  | 0  | 0  |
|                                              | 13   | 0       | 0  | 0  | 0  | 43   | 0       | 0  | 0  | 0  |
|                                              | 14   | 0       | 0  | 0  | 0  | 44   | 0       | 0  | 0  | 0  |
|                                              | 15   | 0       | 0  | 0  | 0  | 45   | 0       | 0  | 0  | 0  |
|                                              | 16   | 0       | 0  | 0  | 0  | 46   | 0       | 0  | 0  | 0  |
|                                              | 17   | 0       | 0  | 0  | 0  | 47   | 0       | 0  | 0  | 0  |
|                                              | 18   | 0       | 0  | 0  | 0  | 48   | 0       | 0  | 0  | 0  |
|                                              | 19   | 0       | 0  | 0  | 0  | 49   | 0       | 0  | 0  | 0  |
|                                              | 20   | 0       | 0  | 0  | 0  | 50   | 0       | 0  | 0  | 0  |
|                                              | 21   | 0       | 0  | 0  | 0  | 51   | 0       | 0  | 0  | 0  |
|                                              | 22   | 0       | 0  | 0  | 0  | 52   | 0       | 0  | 0  | 0  |
|                                              | 23   | 0       | 0  | 0  | 0  | 53   | 0       | 0  | 0  | 0  |
|                                              | 24   | 0       | 0  | 0  | 0  | 54   | 0       | 0  | 0  | 0  |
|                                              | 25   | 0       | 0  | 0  | 0  | 55   | 0       | 0  | 0  | 0  |
|                                              | 26   | 0       | 0  | 0  | 0  | 56   | 0       | 0  | 0  | 0  |
|                                              | 27   | 0       | 0  | 0  | 0  | 57   | 0       | 0  | 0  | 0  |
|                                              | 28   | 0       | 0  | 0  | 0  | 58   | 0       | 0  | 0  | 0  |
|                                              | 29   | 0       | 0  | 0  | 0  | 59   | 0       | 0  | 0  | 0  |

Observer Location  
 (Diagram on back of sheet)  
 Distance from Observer to source 300'  
 Height of Source (above ground) 0 to 20'

Weather Conditions  
 Wind Direction NW  
 Wind Speed 5 to 10  
 Temperature 75  
 Position of Sun E  
 Sky Condition overcast  
 (clear, overcast, %clouds,  
 color of clouds, etc.) Dark

Plume Description  
 Color White Dust  
 Background sky  
 Type (wet or dry) Dry Dist. \_\_\_\_\_

Comments \_\_\_\_\_

Observer's Signature Dale Vineyard

Date of Last EPA Method 9 Examination 10-7-98

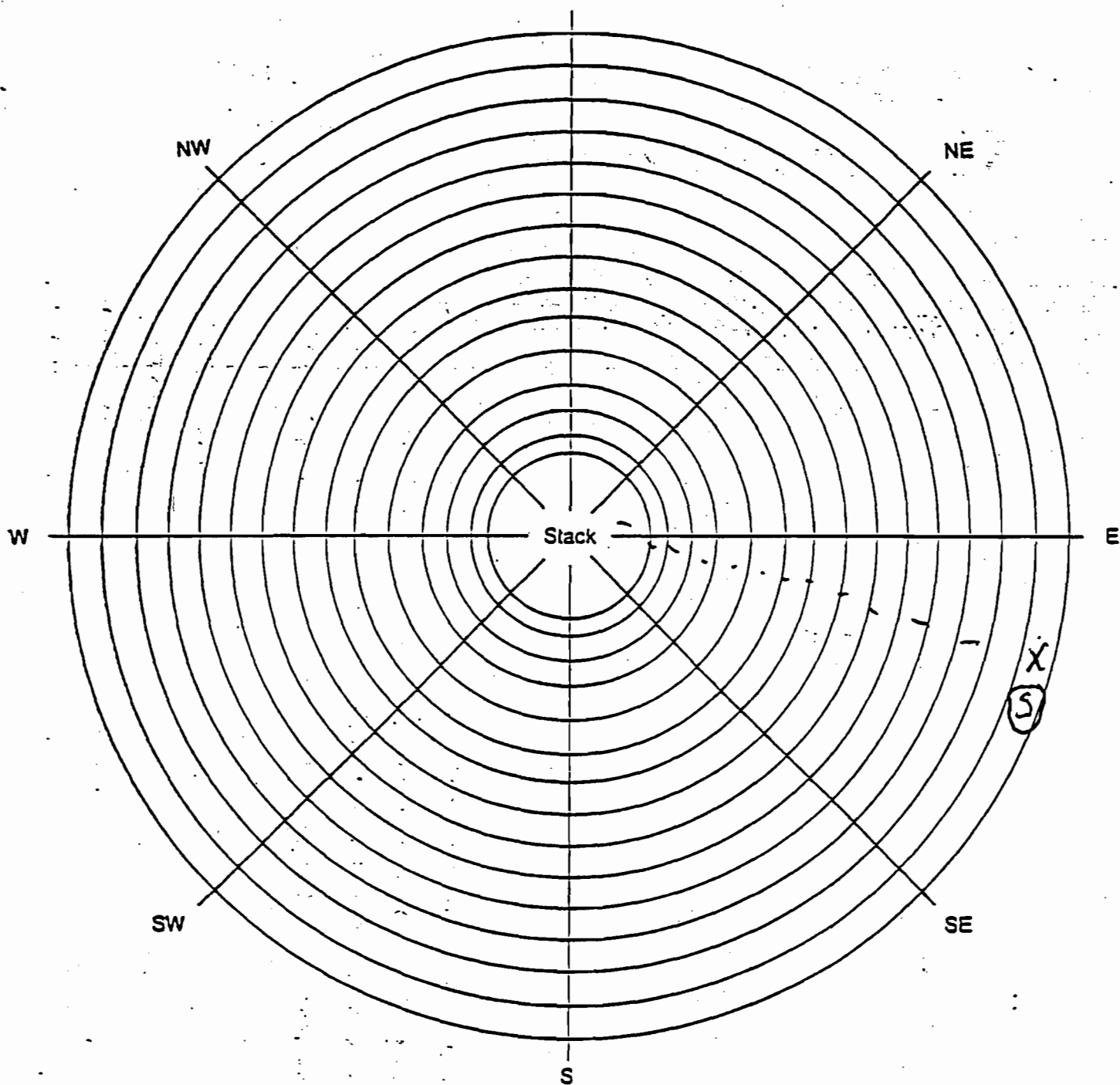
Examination Passed in EPA Region Eastern

distance (ft.) from plume outlet to point in plume where observations made



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LOCATE THE FOLLOWING ON THE DIAGRAM

1. The stack configuration with the stack under observation in the center
2. Observer's position using X to indicate position.
3. Arrow pointing direction wind is blowing.
4. Dotted line between observer and plume indicating observers line of sight when making readings.
5. Circle with S in center to indicate sun location.
6. Any large structures or significant topographical features.

NOTE: Stack configuration is not proportional to distances in feet from stack in the diagram.



Total Source Analysis, Inc.  
Environmental Testing Consultants

# Visible Emissions Evaluation Data Sheet

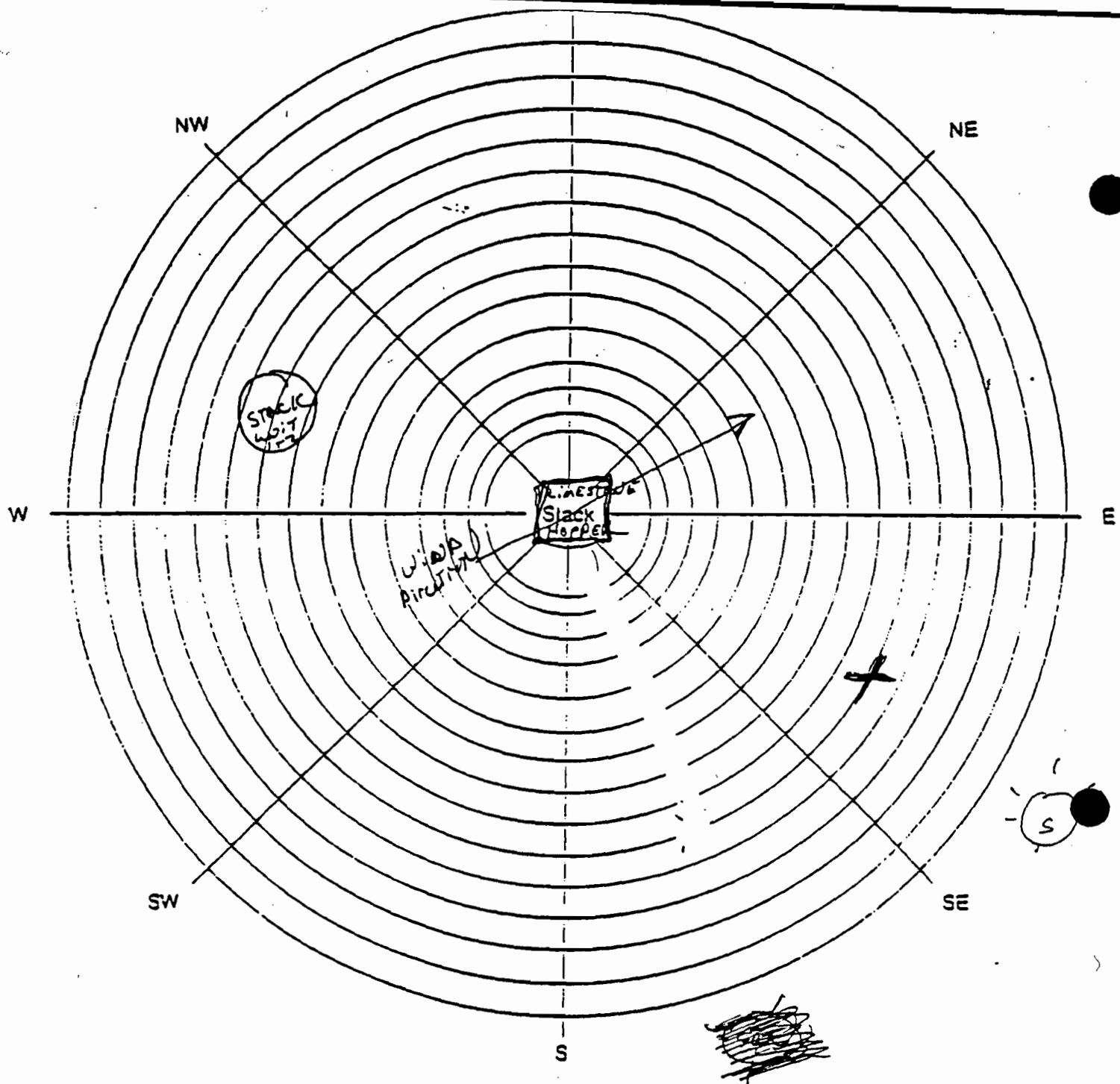
Client J.E.A. Observer John C. Sutton  
 Project No. 97-422 Date 10-3-97  
 Plant Name ST. Johns RIVER POWER PARK Observation began 0900  
 Location JACKSONVILLE FL. ended 1015  
 Type of Facility LIMESTONE HOPPER (POWER PLANT)

| Source Identification<br>(Stack, Duct, etc.)                    | Min. | Seconds |    |    |    | Min. | Seconds |    |    |    |
|-----------------------------------------------------------------|------|---------|----|----|----|------|---------|----|----|----|
|                                                                 |      | 0       | 15 | 30 | 45 |      | 0       | 15 | 30 | 45 |
| <u>STACK</u>                                                    | 0    | 0       | 0  | 0  | 0  | 30   | 0       | 0  | 0  | 0  |
|                                                                 | 1    | 0       | 0  | 0  | 5  | 31   | 0       | 0  | 0  | 0  |
|                                                                 | 2    | 0       | 0  | 0  | 0  | 32   | 0       | 0  | 5  | 0  |
|                                                                 | 3    | 0       | 0  | 0  | 0  | 33   | 0       | 0  | 0  | 0  |
| Observer Location<br>(Diagram on back of sheet)                 | 4    | 0       | 0  | 0  | 0  | 34   | 0       | 0  | 0  | 0  |
| Distance from Observer to source <u>200 FT</u>                  | 5    | 0       | 0  | 0  | 0  | 35   | 0       | 0  | 0  | 0  |
| Height of Source (above ground) <u>15' 20'</u>                  | 6    | 0       | 0  | 0  | 0  | 36   | 0       | 0  | 0  | 0  |
| Weather Conditions                                              | 7    | 0       | 5  | 0  | 0  | 37   | 0       | 0  | 0  | 0  |
| Wind Direction <u>NE</u>                                        | 8    | 0       | 0  | 0  | 0  | 38   | 0       | 0  | 0  | 0  |
| Wind Speed <u>0-5</u>                                           | 9    | 0       | 0  | 0  | 0  | 39   | 0       | 0  | 0  | 0  |
| Temperature <u>65</u>                                           | 10   | 0       | 0  | 0  | 0  | 40   | 0       | 0  | 0  | 0  |
| Position of Sun <u>SOUTH EAST</u>                               | 11   | 0       | 0  | 0  | 0  | 41   | 0       | 0  | 0  | 0  |
| Sky Condition <u>25% CLOUDS</u>                                 | 12   | 0       | 0  | 0  | 0  | 42   | 5       | 5  | 0  | 0  |
| (clear, overcast, etc.)                                         | 13   | 0       | 0  | 0  | 0  | 43   | 0       | 0  | 0  | 0  |
|                                                                 | 14   | 0       | 0  | 0  | 0  | 44   | 0       | 0  | 0  | 0  |
|                                                                 | 15   | 0       | 0  | 0  | 0  | 45   | 0       | 0  | 0  | 0  |
| Plume Description                                               | 16   | 0       | 0  | 0  | 0  | 46   | 0       | 0  | 0  | 0  |
| Color <u>Blue sky</u>                                           | 17   | 0       | 0  | 0  | 0  | 47   | 0       | 0  | 0  | 0  |
| Background <u>Dry</u>                                           | 18   | 0       | 0  | 0  | 0  | 48   | 0       | 0  | 0  | 0  |
| Type (wet or dry) <u>Dry</u> Dist. <u></u>                      | 19   | 0       | 0  | 0  | 0  | 49   | 0       | 0  | 0  | 5  |
| Comments                                                        | 20   | 0       | 0  | 0  | 0  | 50   | 0       | 0  | 0  | 0  |
|                                                                 | 21   | 0       | 0  | 0  | 0  | 51   | 0       | 0  | 0  | 0  |
|                                                                 | 22   | 0       | 0  | 0  | 0  | 52   | 0       | 0  | 0  | 0  |
|                                                                 | 23   | 0       | 0  | 0  | 0  | 53   | 0       | 0  | 0  | 0  |
|                                                                 | 24   | 0       | 0  | 0  | 0  | 54   | 0       | 0  | 0  | 0  |
|                                                                 | 25   | 0       | 0  | 0  | 0  | 55   | 0       | 0  | 0  | 0  |
| Observers Signature <u>John C. Sutton</u>                       | 26   | 0       | 0  | 0  | 0  | 56   | 0       | 0  | 0  | 0  |
| Date of last EPA Method 9 Examination <u>October 1997 (ETA)</u> | 27   | 0       | 0  | 0  | 0  | 57   | 0       | 0  | 0  | 0  |
| Examination Passed in EPA Region                                | 28   | 0       | 0  | 0  | 0  | 58   | 0       | 0  | 0  | 0  |
|                                                                 | 29   | 0       | 5  | 10 | 0  | 59   | 0       | 0  | 0  | 0  |

Notes: (1) from plume outlet to point in plume where observations made



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LOCATE THE FOLLOWING ON THE DIAGRAM

1. The stack configuration with the stack under observation in the center
2. Observer's position using X to indicate position.
3. Arrow pointing direction wind is blowing.
4. Dotted line between observer and plume indicating observers line of sight when making readings.
5. Circle with S in center to indicate sun location.
6. Any large structures or significant topographical features.

NOTE: Stack configuration is not proportional to distances in feet from stack in the diagram.



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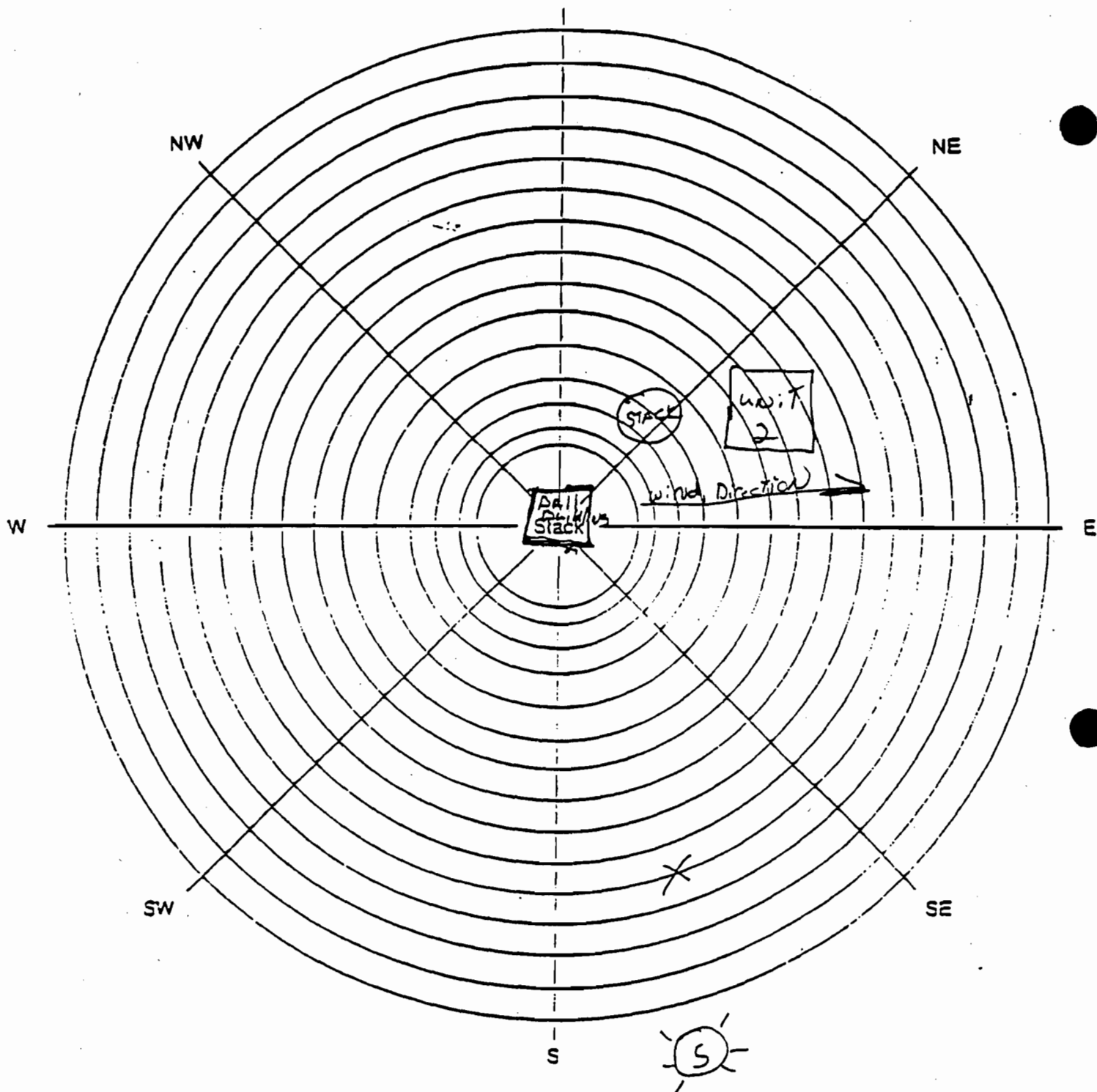
ent. TEA Observer John Suttell  
 Subject No. 97-422 Date 11.3.97  
 Plant Name STRIP Observation began 1025  
 Location Jacksonville FL. ended 1125  
 Name of Facility POWER PLANT (Limestone Handling) Ballmill Building

| Source Identification<br>(Stack, duct, etc.)                                                                                                                                                                                                        | Min. | Seconds |    |    |    | Min. | Seconds |    |    |    |
|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------|---------|----|----|----|------|---------|----|----|----|
|                                                                                                                                                                                                                                                     |      | 0       | 15 | 30 | 45 |      | 0       | 15 | 30 | 45 |
| STACK (Limestone silos)                                                                                                                                                                                                                             | 0    | 0       | 0  | 0  | 0  | 30   | 0       | 0  | 0  | 0  |
|                                                                                                                                                                                                                                                     | 1    | 0       | 0  | 0  | 0  | 31   | 0       | 0  | 0  | 0  |
|                                                                                                                                                                                                                                                     | 2    | 0       | 0  | 0  | 0  | 32   | 0       | 0  | 0  | 0  |
|                                                                                                                                                                                                                                                     | 3    | 0       | 0  | 0  | 0  | 33   | 0       | 0  | 0  | 0  |
|                                                                                                                                                                                                                                                     | 4    | 0       | 0  | 0  | 0  | 34   | 0       | 0  | 0  | 0  |
| Observer Location<br>(Diagram on back of sheet)<br>Distance from Observer to source <u>800'</u><br>Height of Source (above ground) <u>140'</u>                                                                                                      | 5    | 0       | 0  | 0  | 0  | 35   | 0       | 0  | 0  | 0  |
|                                                                                                                                                                                                                                                     | 6    | 0       | 0  | 0  | 0  | 36   | 0       | 0  | 0  | 0  |
|                                                                                                                                                                                                                                                     | 7    | 0       | 0  | 0  | 0  | 37   | 0       | 0  | 0  | 0  |
|                                                                                                                                                                                                                                                     | 8    | 0       | 0  | 0  | 0  | 38   | 0       | 0  | 0  | 0  |
|                                                                                                                                                                                                                                                     | 9    | 0       | 0  | 0  | 0  | 39   | 0       | 0  | 0  | 0  |
| Weather Conditions<br>Wind Direction <u>DE</u><br>Wind Speed <u>0-5 MPH</u><br>Temperature <u>65</u><br>Position of Sun <u>SE</u><br>Sky Condition <u>25% clouds</u><br>(clear, overcast, %clouds,<br>color of clouds, etc.)<br><u>WHITE clouds</u> | 10   | 0       | 0  | 0  | 0  | 40   | 0       | 0  | 0  | 0  |
|                                                                                                                                                                                                                                                     | 11   | 0       | 0  | 0  | 0  | 41   | 0       | 0  | 0  | 0  |
|                                                                                                                                                                                                                                                     | 12   | 0       | 0  | 0  | 0  | 42   | 0       | 0  | 0  | 0  |
|                                                                                                                                                                                                                                                     | 13   | 0       | 0  | 0  | 0  | 43   | 0       | 0  | 0  | 0  |
|                                                                                                                                                                                                                                                     | 14   | 0       | 0  | 0  | 0  | 44   | 0       | 0  | 0  | 0  |
| Plume Description<br>Color _____<br>Background <u>SKY</u><br>Type (wet or dry) <u>Dry</u> Dist. _____                                                                                                                                               | 15   | 0       | 0  | 0  | 0  | 45   | 0       | 0  | 0  | 0  |
|                                                                                                                                                                                                                                                     | 16   | 0       | 0  | 0  | 0  | 46   | 0       | 0  | 0  | 0  |
|                                                                                                                                                                                                                                                     | 17   | 0       | 0  | 0  | 0  | 47   | 0       | 0  | 0  | 0  |
|                                                                                                                                                                                                                                                     | 18   | 0       | 0  | 0  | 0  | 48   | 0       | 0  | 0  | 0  |
|                                                                                                                                                                                                                                                     | 19   | 0       | 0  | 0  | 0  | 49   | 0       | 0  | 0  | 0  |
| Comments _____                                                                                                                                                                                                                                      | 20   | 0       | 0  | 0  | 0  | 50   | 0       | 0  | 0  | 0  |
|                                                                                                                                                                                                                                                     | 21   | 0       | 0  | 0  | 0  | 51   | 0       | 0  | 0  | 0  |
|                                                                                                                                                                                                                                                     | 22   | 0       | 0  | 0  | 0  | 52   | 0       | 0  | 0  | 0  |
|                                                                                                                                                                                                                                                     | 23   | 0       | 0  | 0  | 0  | 53   | 0       | 0  | 0  | 0  |
|                                                                                                                                                                                                                                                     | 24   | 0       | 0  | 0  | 0  | 54   | 0       | 0  | 0  | 0  |
|                                                                                                                                                                                                                                                     | 25   | 0       | 0  | 0  | 0  | 55   | 0       | 0  | 0  | 0  |
|                                                                                                                                                                                                                                                     | 26   | 0       | 0  | 0  | 0  | 56   | 0       | 0  | 0  | 0  |
|                                                                                                                                                                                                                                                     | 27   | 0       | 0  | 0  | 0  | 57   | 0       | 0  | 0  | 0  |
|                                                                                                                                                                                                                                                     | 28   | 0       | 0  | 0  | 0  | 58   | 0       | 0  | 0  | 0  |
|                                                                                                                                                                                                                                                     | 29   | 0       | 0  | 0  | 0  | 59   | 0       | 0  | 0  | 0  |
| Observers Signature <u>[Signature]</u>                                                                                                                                                                                                              |      |         |    |    |    |      |         |    |    |    |
| Date of 1st EPA Method 9 Examination <u>OCTOBER 1997 (ETA)</u>                                                                                                                                                                                      |      |         |    |    |    |      |         |    |    |    |
| Examination Passed in EPA Region _____                                                                                                                                                                                                              |      |         |    |    |    |      |         |    |    |    |

Notes: (1) from plume outlet to point in plume where observations made



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LOCATE THE FOLLOWING ON THE DIAGRAM

1. The stack configuration with the stack under observation in the center
2. Observer's position using X to indicate position.
3. Arrow pointing direction wind is blowing.
4. Dotted line between observer and plume indicating observers line of sight when making readings.
5. Circle with S in center to indicate sun location.
6. Any large structures or significant topographical features.

NOTE: Stack configuration is not proportional to distances in feet from stack in the diagram.



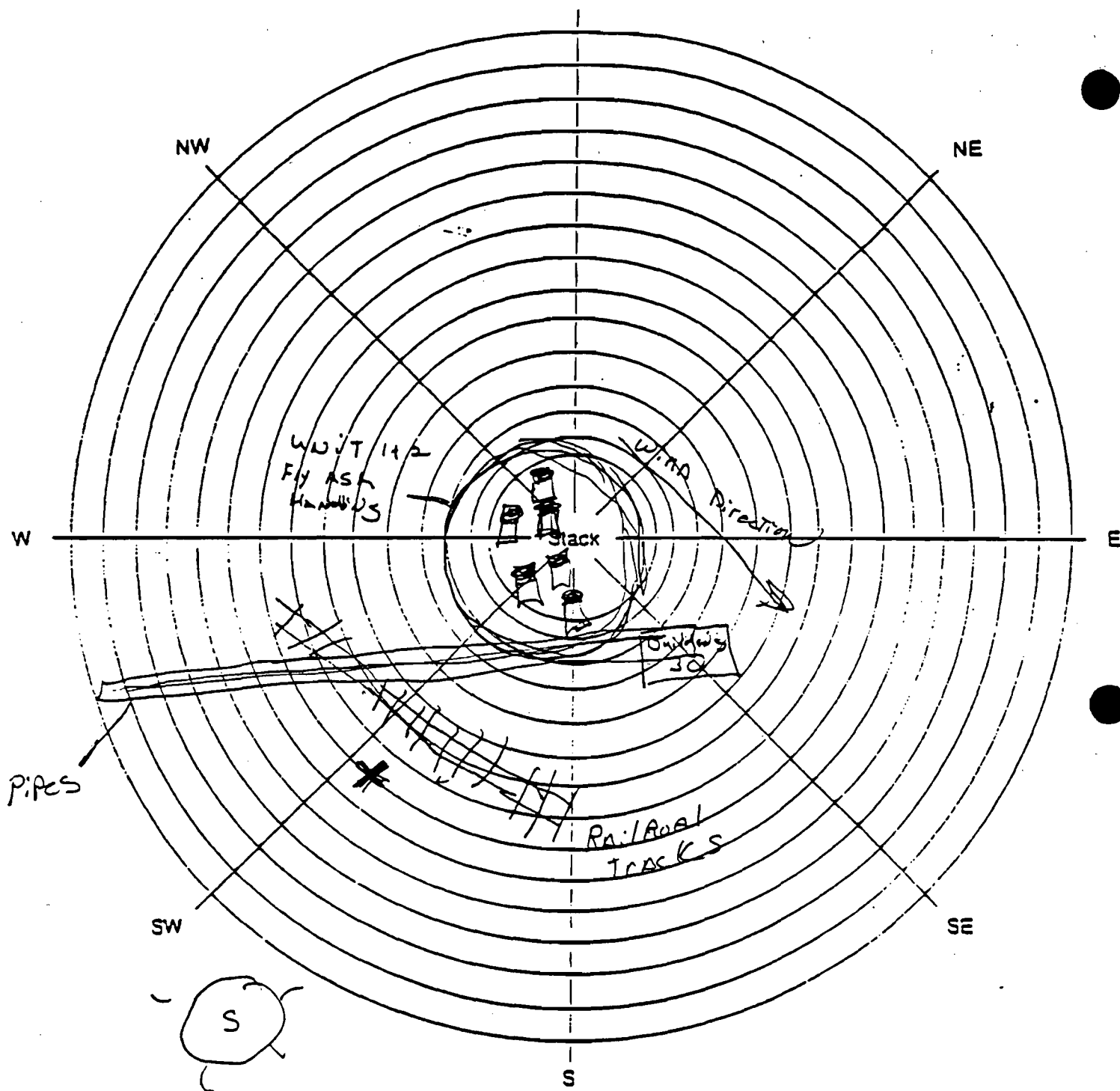
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# Visible Emissions Evaluation Data Sheet

Client J.E.A. Observer John Smith  
 Project No. 97-422 Date 11-4-97  
 Plant Name SJRPP Observation began 1310  
 Location JACKSONVILLE FL ended 1411  
 Type of Facility POWER PLANT

| Source Identification<br>(Stack, Duct, etc.)         | Min. | Seconds |    |    |    | Min. | Seconds |    |    |    |
|------------------------------------------------------|------|---------|----|----|----|------|---------|----|----|----|
|                                                      |      | 0       | 15 | 30 | 45 |      | 0       | 15 | 30 | 45 |
| <u>UNIT 1+2 FLY ASH</u>                              | 0    | 0       | 0  | 0  | 0  | 30   | 0       | 0  | 0  | 0  |
| <u>HANDLING AREA</u>                                 | 1    | 0       | 0  | 0  | 0  | 31   | 0       | 0  | 0  | 0  |
|                                                      | 2    | 0       | 0  | 0  | 0  | 32   | 0       | 0  | 0  | 0  |
|                                                      | 3    | 0       | 0  | 0  | 0  | 33   | 0       | 0  | 0  | 0  |
| Observer Location<br>(Diagram on back of sheet)      | 4    | 0       | 0  | 0  | 0  | 34   | 0       | 0  | 0  | 0  |
| Distance from Observer to source <u>150'</u>         | 5    | 0       | 0  | 0  | 0  | 35   | 0       | 0  | 0  | 0  |
| Height of Source (above ground) <u>0-150'</u>        | 6    | 0       | 0  | 0  | 0  | 36   | 0       | 0  | 0  | 0  |
|                                                      | 7    | 0       | 0  | 0  | 0  | 37   | 0       | 0  | 0  | 0  |
| Weather Conditions                                   | 8    | 0       | 0  | 0  | 0  | 38   | 0       | 0  | 0  | 0  |
| Wind Direction <u>SE</u>                             | 9    | 0       | 0  | 0  | 0  | 39   | 0       | 0  | 0  | 0  |
| Wind Speed <u>0-5</u>                                | 10   | 0       | 0  | 0  | 0  | 40   | 0       | 0  | 0  | 0  |
| Temperature <u>70</u>                                | 11   | 0       | 0  | 0  | 0  | 41   | 0       | 0  | 0  | 0  |
| Position of Sun <u>SOUTH</u>                         | 12   | 0       | 0  | 0  | 0  | 42   | 0       | 0  | 0  | 0  |
| Sky Condition <u>CLEAR</u>                           | 13   | 0       | 0  | 0  | 0  | 43   | 0       | 0  | 0  | 0  |
| (clear, overcast, %clouds,<br>color of clouds, etc.) | 14   | 0       | 0  | 0  | 0  | 44   | 0       | 0  | 0  | 0  |
|                                                      | 15   | 0       | 0  | 0  | 0  | 45   | 0       | 0  | 0  | 0  |
| Plume Description                                    | 16   | 0       | 0  | 0  | 0  | 46   | 5       | 5  | 5  | 5  |
| Color <u>BROWN</u>                                   | 17   | 0       | 0  | 0  | 0  | 47   | 0       | 0  | 0  | 0  |
| Background <u>SKY</u>                                | 18   | 0       | 0  | 0  | 0  | 48   | 0       | 0  | 0  | 0  |
| Type (wet or dry) <u>Dry</u> Dist. _____             | 19   | 0       | 0  | 0  | 0  | 49   | 0       | 0  | 0  | 0  |
| Comments                                             | 20   | 0       | 0  | 0  | 0  | 50   | 0       | 0  | 0  | 0  |
|                                                      | 21   | 0       | 0  | 0  | 0  | 51   | 0       | 0  | 0  | 0  |
|                                                      | 22   | 0       | 0  | 0  | 0  | 52   | 0       | 0  | 0  | 0  |
|                                                      | 23   | 5       | 5  | 0  | 0  | 53   | 0       | 0  | 0  | 0  |
|                                                      | 24   | 5       | 5  | 5  | 5  | 54   | 0       | 0  | 0  | 0  |
|                                                      | 25   | 0       | 0  | 0  | 0  | 55   | 0       | 0  | 0  | 0  |
| Observers Signature <u>John C. Smith</u>             | 26   | 0       | 0  | 0  | 0  | 56   | 0       | 0  | 0  | 0  |
| Date of Last EPA Method 9 Examination                | 27   | 0       | 0  | 0  | 0  | 57   | 0       | 0  | 0  | 0  |
| <u>OCTOBER 1997</u>                                  | 28   | 0       | 0  | 0  | 0  | 58   | 0       | 0  | 0  | 0  |
| Examination Passed in EPA Region                     | 29   | 0       | 0  | 0  | 0  | 59   | 0       | 0  | 0  | 0  |
| <u>AKRON OH</u>                                      |      |         |    |    |    |      |         |    |    |    |



# LOCATE THE FOLLOWING ON THE DIAGRAM

1. The stack configuration with the stack under observation in the center
2. Observer's position using X to indicate position.
3. Arrow pointing direction wind is blowing.
4. Dotted line between observer and plume indicating observers line of sight when making readings.
5. Circle with S in center to indicate sun location.
6. Any large structures or significant topographical features.

NOTE: Stack configuration is not proportional to distances in feet from stack in the diagram.



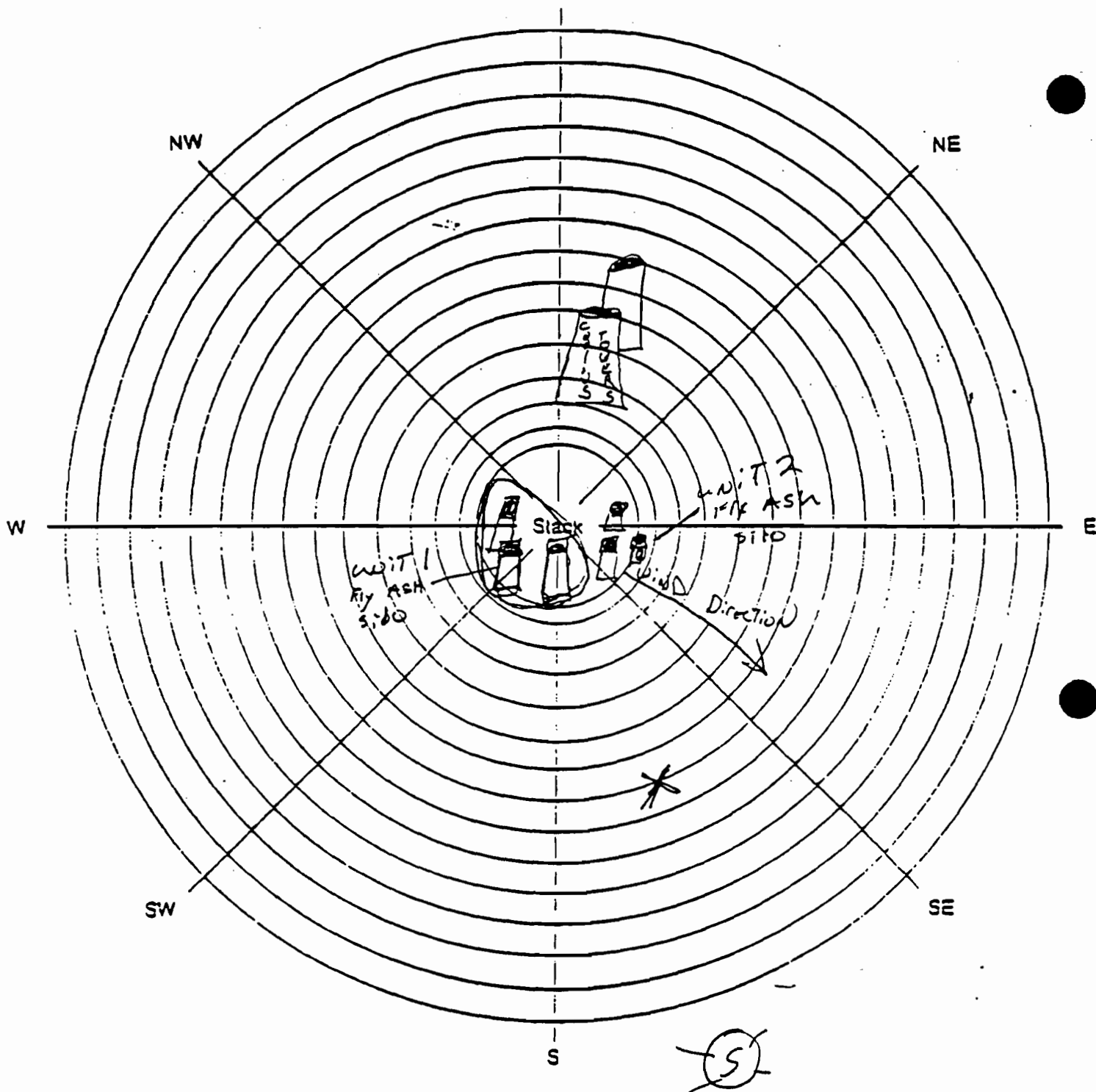
Client JE-A Observer John Sutton  
 Project No. 97-422 Date 11-4-97  
 Plant Name STRPP Observation began 0840  
 Location JACKSONVILLE FL. ended 0940  
 Type of Facility POWER PLANT

| Source Identification<br>(Stack, Duct, etc.)    | Min. | Seconds |    |    |    | Min. | Seconds |    |    |    |
|-------------------------------------------------|------|---------|----|----|----|------|---------|----|----|----|
|                                                 |      | 0       | 15 | 30 | 45 |      | 0       | 15 | 30 | 45 |
| <u>Fly Ash Silo (unit 1)</u>                    | 0    | 0       | 0  | 0  | 0  | 30   | 0       | 0  | 0  | 0  |
| <u>(South Side)</u>                             | 1    | 0       | 0  | 0  | 0  | 31   | 0       | 0  | 0  | 0  |
|                                                 | 2    | 0       | 0  | 0  | 0  | 32   | 0       | 0  | 0  | 0  |
|                                                 | 3    | 0       | 0  | 0  | 0  | 33   | 0       | 0  | 0  | 0  |
| Observer Location<br>(Diagram on back of sheet) | 4    | 0       | 0  | 0  | 0  | 34   | 0       | 0  | 0  | 0  |
| Distance from Observer to source <u>260'</u>    | 5    | 0       | 0  | 0  | 0  | 35   | 0       | 0  | 0  | 0  |
| Height of Source (above ground) <u>150'</u>     | 6    | 0       | 5  | 0  | 0  | 36   | 0       | 0  | 0  | 0  |
| Weather Conditions                              | 7    | 0       | 0  | 0  | 0  | 37   | 0       | 0  | 0  | 0  |
| Wind Direction <u>SE</u>                        | 8    | 0       | 0  | 0  | 0  | 38   | 0       | 0  | 0  | 0  |
| Wind Speed <u>0-5</u>                           | 9    | 0       | 0  | 0  | 0  | 39   | 0       | 0  | 0  | 0  |
| Temperature <u>65</u>                           | 10   | 0       | 0  | 0  | 0  | 40   | 0       | 0  | 0  | 0  |
| Position of Sun <u>SOUTH EAST</u>               | 11   | 0       | 0  | 0  | 0  | 41   | 0       | 0  | 0  | 0  |
| Sky Condition <u>Clouds</u>                     | 12   | 0       | 0  | 0  | 0  | 42   | 0       | 0  | 0  | 0  |
| (clear, overcast, etc.)                         | 13   | 0       | 0  | 0  | 0  | 43   | 0       | 0  | 0  | 0  |
| color of clouds, etc.)                          | 14   | 0       | 0  | 0  | 0  | 44   | 0       | 0  | 0  | 0  |
|                                                 | 15   | 0       | 0  | 0  | 0  | 45   | 0       | 0  | 0  | 0  |
| Plume Description                               | 16   | 0       | 0  | 0  | 0  | 46   | 0       | 0  | 0  | 0  |
| Color <u>W/A</u>                                | 17   | 0       | 0  | 0  | 0  | 47   | 0       | 0  | 0  | 0  |
| Background <u>GRY</u>                           | 18   | 0       | 0  | 0  | 0  | 48   | 0       | 0  | 0  | 0  |
| Type (wet or dry) <u>Dry</u> Dist. _____        | 19   | 0       | 0  | 0  | 0  | 49   | 0       | 0  | 0  | 0  |
| Comments                                        | 20   | 0       | 0  | 0  | 0  | 50   | 0       | 0  | 0  | 0  |
|                                                 | 21   | 0       | 0  | 0  | 0  | 51   | 0       | 0  | 0  | 0  |
|                                                 | 22   | 0       | 0  | 0  | 0  | 52   | 0       | 0  | 0  | 0  |
|                                                 | 23   | 0       | 0  | 0  | 0  | 53   | 0       | 0  | 0  | 0  |
|                                                 | 24   | 0       | 0  | 0  | 0  | 54   | 0       | 0  | 0  | 0  |
|                                                 | 25   | 0       | 0  | 0  | 0  | 55   | 0       | 0  | 0  | 0  |
| Observers Signature                             | 26   | 0       | 0  | 0  | 0  | 56   | 0       | 0  | 0  | 0  |
| <u>John Sutton</u>                              | 27   | 0       | 0  | 0  | 0  | 57   | 0       | 0  | 0  | 0  |
| Date of Last EPA Method 9 Examination           | 28   | 0       | 0  | 0  | 0  | 58   | 0       | 0  | 0  | 0  |
| <u>OCTOBER 1997</u>                             | 29   | 0       | 0  | 0  | 0  | 59   | 0       | 0  | 0  | 0  |
| Examination Passed in EPA Region                |      |         |    |    |    |      |         |    |    |    |

Distance (ft.) from plume outlet to point in plume where observations made



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LOCATE THE FOLLOWING ON THE DIAGRAM

1. The stack configuration with the stack under observation in the center
2. Observer's position using X to indicate position.
3. Arrow pointing direction wind is blowing.
4. Dotted line between observer and plume indicating observers line of sight when making readings.
5. Circle with S in center to indicate sun location.
6. Any large structures or significant topographical features.

NOTE: Stack configuration is not proportional to distances in feet from stack in the diagram.



Total Source Analysis, Inc.

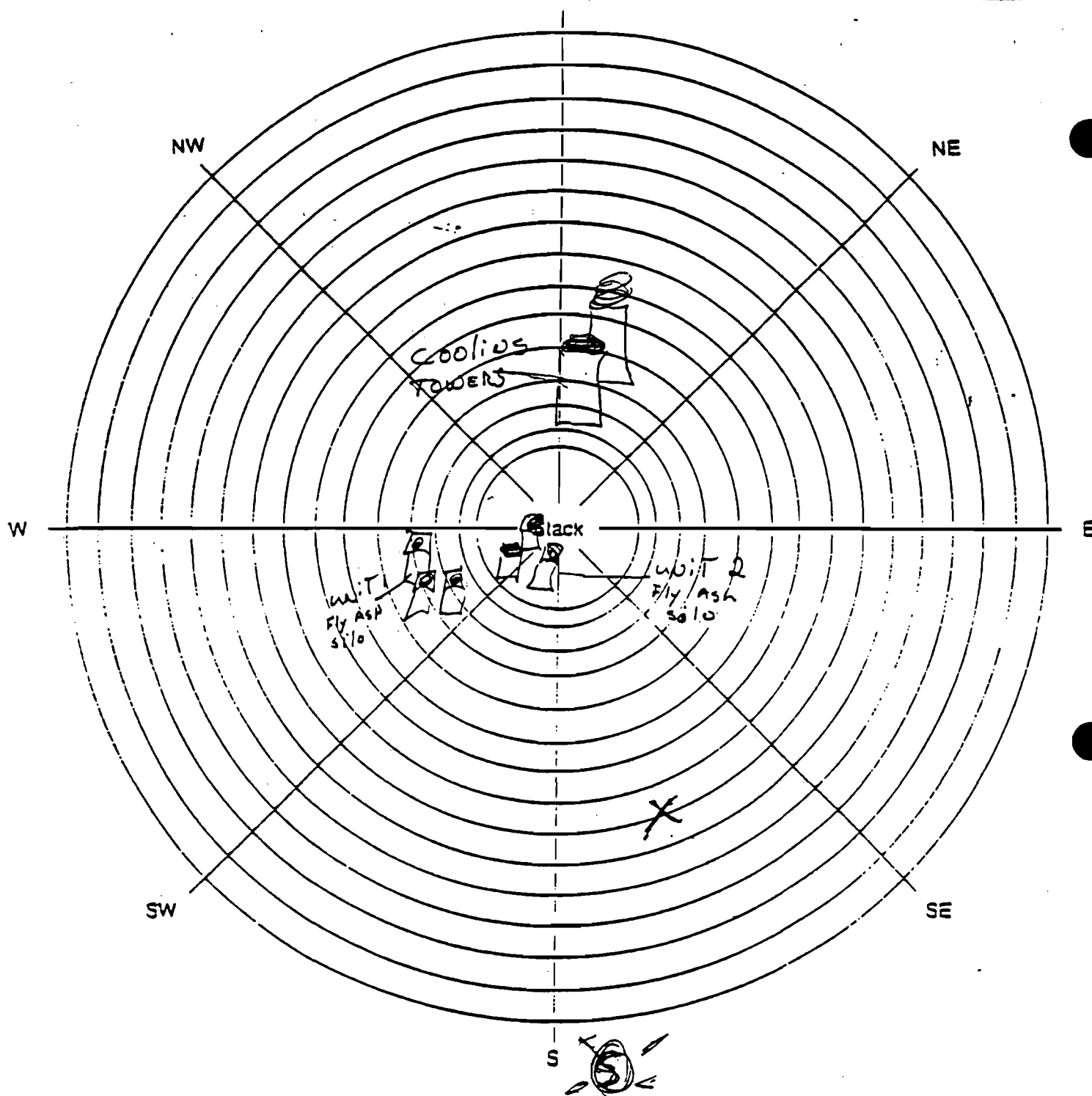
Client J.E.A. Observer John C Sutton  
 Project No. 97-422 Date 11.4.97  
 Plant Name SJAPP Observation began 6:45  
 Location JACKSONVILLE FL. ended 10:45  
 Type of Facility POWER PLANT

| Source Identification<br>(Stack, Duct, etc.) | Min. | Seconds |    |    |    | Min. | Seconds |    |    |    |
|----------------------------------------------|------|---------|----|----|----|------|---------|----|----|----|
|                                              |      | 0       | 15 | 30 | 45 |      | 0       | 15 | 30 | 45 |
| <u>Fly Ash Silo (unit 2)</u>                 | 0    | 0       | 0  | 0  | 0  | 30   | 0       | 0  | 0  | 0  |
| <u>NORTH SIDE</u>                            | 1    | 0       | 0  | 0  | 0  | 31   | 0       | 0  | 0  | 0  |
|                                              | 2    | 0       | 0  | 0  | 0  | 32   | 0       | 0  | 0  | 0  |
|                                              | 3    | 0       | 0  | 0  | 0  | 33   | 0       | 0  | 0  | 0  |
|                                              | 4    | 0       | 0  | 0  | 0  | 34   | 0       | 0  | 0  | 0  |
| Observer Location                            | 5    | 0       | 0  | 0  | 0  | 35   | 0       | 0  | 0  | 0  |
| (Diagram on back of sheet)                   | 6    | 0       | 0  | 0  | 0  | 36   | 0       | 0  | 0  | 0  |
| Distance from Observer to source <u>225'</u> | 7    | 0       | 0  | 0  | 0  | 37   | 0       | 0  | 0  | 0  |
| Height of Source (above ground) <u>150'</u>  | 8    | 0       | 0  | 0  | 0  | 38   | 0       | 0  | 0  | 0  |
| Weather Conditions                           | 9    | 0       | 0  | 0  | 0  | 39   | 0       | 0  | 0  | 0  |
| Wind Direction <u>SE</u>                     | 10   | 0       | 0  | 0  | 0  | 40   | 0       | 0  | 0  | 0  |
| Wind Speed <u>0-5</u>                        | 11   | 0       | 0  | 0  | 0  | 41   | 0       | 0  | 0  | 0  |
| Temperature <u>65</u>                        | 12   | 0       | 0  | 0  | 0  | 42   | 0       | 0  | 0  | 0  |
| Position of Sun <u>S. EAST</u>               | 13   | 0       | 0  | 0  | 0  | 43   | 0       | 0  | 0  | 0  |
| Sky Condition <u>25% Cloud</u>               | 14   | 0       | 0  | 0  | 0  | 44   | 0       | 0  | 0  | 0  |
| (clear, overcast, hazy, etc.)                | 15   | 0       | 0  | 0  | 0  | 45   | 0       | 0  | 0  | 0  |
|                                              | 16   | 0       | 0  | 0  | 0  | 46   | 0       | 0  | 0  | 0  |
| Plume Description                            | 17   | 0       | 0  | 0  | 0  | 47   | 0       | 0  | 0  | 0  |
| Color <u>W/A</u>                             | 18   | 0       | 0  | 0  | 0  | 48   | 0       | 0  | 0  | 0  |
| Background <u>sky</u>                        | 19   | 0       | 0  | 0  | 0  | 49   | 0       | 0  | 0  | 0  |
| Type (wet or dry) <u>Dry</u> Dist. _____     | 20   | 0       | 0  | 0  | 0  | 50   | 0       | 0  | 0  | 0  |
| Comments                                     | 21   | 0       | 0  | 0  | 0  | 51   | 0       | 0  | 0  | 0  |
|                                              | 22   | 0       | 0  | 0  | 0  | 52   | 0       | 0  | 0  | 0  |
|                                              | 23   | 0       | 0  | 0  | 0  | 53   | 0       | 0  | 0  | 0  |
|                                              | 24   | 0       | 0  | 0  | 0  | 54   | 0       | 0  | 0  | 0  |
|                                              | 25   | 0       | 0  | 0  | 0  | 55   | 0       | 0  | 0  | 0  |
| Observers Signature                          | 26   | 0       | 0  | 0  | 0  | 56   | 0       | 0  | 0  | 0  |
| <u>John C Sutton</u>                         | 27   | 0       | 0  | 0  | 0  | 57   | 0       | 0  | 0  | 0  |
| Date of Last EPA Method 9 Examination        | 28   | 0       | 0  | 0  | 0  | 58   | 0       | 0  | 0  | 0  |
| <u>OCTOBER 1997</u>                          | 29   | 0       | 0  | 0  | 0  | 59   | 0       | 0  | 0  | 0  |
| Examination Passed in EPA Region             |      |         |    |    |    |      |         |    |    |    |
| <u>AKCN WA</u>                               |      |         |    |    |    |      |         |    |    |    |

Distance (ft.) from plume outlet to point in plume where observations made



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 Total Source Analysis, Inc.  
 Environmental Testing Consultants



LOCATE THE FOLLOWING ON THE DIAGRAM

1. The stack configuration with the stack under observation in the center
2. Observer's position using X to indicate position.
3. Arrow pointing direction wind is blowing.
4. Dotted line between observer and plume indicating observers line of sight when making readings.
5. Circle with S in center to indicate sun location.
6. Any large structures or significant topographical features.

NOTE: Stack configuration is not proportional to distances in feet from stack in the diagram.



Total Source Analysis, Inc.  
Environmental Testing Corporation  
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**EMISSIONS UNIT EU023**  
**Materials Handling & Storage Operations**

**ATTACHMENT EU023-05**  
**Emissions Estimates**

**Foster Wheeler Environmental Corporation**  
**EXCEL 7.0 Worksheet Calculation**

**By:** D. Graziani, P.E.  
**Date:** 11/3/98

**Cal. No.:** 901103DJG01  
**Project No.:** 7830.0020.0056

**Ckd. By:** Kim Evans, P.E.  
**Date:** 11/10/98

**Revision No.:** 1

**Project:** St. Johns River Power Park PSD Permit Update  
**Subject:** Emissions Estimates for the Rail Car Rotary Dumper

**Emissions Data**

| Raw Materials  | Constant | Wind Speed<br>(MPH) | H2O<br>(%) | Particle Size Multipliers |      |       | Emission Factors (lb/ton) |         |         |
|----------------|----------|---------------------|------------|---------------------------|------|-------|---------------------------|---------|---------|
|                |          |                     |            | PM                        | PM10 | PM2.5 | PM                        | PM10    | PM2.5   |
| Coal           | 0.0032   | 8.00                | 5          | 0.74                      | 0.35 | 0.11  | 0.00121                   | 0.00057 | 0.00018 |
| Petroleum Coke | 0.0032   | 8.00                | 5          | 0.74                      | 0.35 | 0.11  | 0.00121                   | 0.00057 | 0.00018 |

**Operating Data**

| Raw Materials  | Operating Rates |         |
|----------------|-----------------|---------|
|                | (TPH)           | (TPY)   |
| Coal           | 4000            | 5126352 |
| Petroleum Coke | 4000            | 5126352 |

**Emission Rates - Uncontrolled**

| Raw Materials  | Short-Term    |                 |                  |             |               |                |
|----------------|---------------|-----------------|------------------|-------------|---------------|----------------|
|                | PM<br>(lb/hr) | PM10<br>(lb/hr) | PM2.5<br>(lb/hr) | PM<br>(g/s) | PM10<br>(g/s) | PM2.5<br>(g/s) |
| Coal           | 4.84          | 2.29            | 0.72             | 0.610       | 0.289         | 0.091          |
| Petroleum Coke | 4.84          | 2.29            | 0.72             | 0.610       | 0.289         | 0.091          |

**Emission Rates - Controlled 97.00%**

| Raw Materials  | Short-Term    |                 |                  |             |               |                |
|----------------|---------------|-----------------|------------------|-------------|---------------|----------------|
|                | PM<br>(lb/hr) | PM10<br>(lb/hr) | PM2.5<br>(lb/hr) | PM<br>(g/s) | PM10<br>(g/s) | PM2.5<br>(g/s) |
| Coal           | 0.145         | 0.069           | 0.022            | 0.018       | 0.009         | 0.003          |
| Petroleum Coke | 0.145         | 0.069           | 0.022            | 0.018       | 0.009         | 0.003          |

**Emission Rates - Uncontrolled**

| Raw Materials  | Long-Term   |               |                |             |               |                |
|----------------|-------------|---------------|----------------|-------------|---------------|----------------|
|                | PM<br>(TPY) | PM10<br>(TPY) | PM2.5<br>(TPY) | PM<br>(g/s) | PM10<br>(g/s) | PM2.5<br>(g/s) |
| Coal           | 3.10        | 1.47          | 0.46           | 0.089       | 0.042         | 0.013          |
| Petroleum Coke | 3.10        | 1.47          | 0.46           | 0.089       | 0.042         | 0.013          |

**Emission Rates - Controlled 97.00%**

| Raw Materials  | Long-Term   |               |                |             |               |                |
|----------------|-------------|---------------|----------------|-------------|---------------|----------------|
|                | PM<br>(TPY) | PM10<br>(TPY) | PM2.5<br>(TPY) | PM<br>(g/s) | PM10<br>(g/s) | PM2.5<br>(g/s) |
| Coal           | 0.093       | 0.044         | 0.014          | 0.0027      | 0.0013        | 0.0004         |
| Petroleum Coke | 0.093       | 0.044         | 0.014          | 0.0027      | 0.0013        | 0.0004         |

**References:**

Emission Factor - AP42 Chapter 13.2.4 Aggregate Handling and Storage Piles  
Wind Speed - Annual Average  
Moisture Contents - JEA Operational Data  
Transfer Rates - JEA Operational Data



**Foster Wheeler Environmental Corporation**  
**EXCEL 7.0 Worksheet Calculation**

**By:** D. Graziani, P.E.

**Date:** 11/3/98

**Cal. No.:** 901103DJG01

**Project No.:** 7830.0020.0056

**Ckd. By:** Kim Evans, P.E.

**Date:** 11/10/98

**Revision No.:** 1

**Project:** St. Johns River Power Park PSD Permit Update

**Subject:** Emissions Estimates for the Emergency Reclaim Hoppers Four Transfer Points

**Emissions Data**

| Raw Materials  | Constant | Belt Speed<br>(MPH) | H2O<br>(%) | Particle Size Multipliers |      |       | Emission Factors (lb/ton) |         |         |
|----------------|----------|---------------------|------------|---------------------------|------|-------|---------------------------|---------|---------|
|                |          |                     |            | PM                        | PM10 | PM2.5 | PM                        | PM10    | PM2.5   |
| Coal           | 0.0032   | 7.38                | 5          | 0.74                      | 0.35 | 0.11  | 0.00109                   | 0.00052 | 0.00016 |
| Petroleum Coke | 0.0032   | 7.38                | 5          | 0.74                      | 0.35 | 0.11  | 0.00109                   | 0.00052 | 0.00016 |

**Operating Data**

| Raw Materials  | Operating Rates |         |
|----------------|-----------------|---------|
|                | (TPH)           | (TPY)   |
| Coal           | 2000            | 5126352 |
| Petroleum Coke | 2000            | 5126352 |

**Emission Rates - Uncontrolled**

| Raw Materials  | Short-Term |         |         |       |       |       |
|----------------|------------|---------|---------|-------|-------|-------|
|                | PM         | PM10    | PM2.5   | PM    | PM10  | PM2.5 |
|                | (lb/hr)    | (lb/hr) | (lb/hr) | (g/s) | (g/s) | (g/s) |
| Coal           | 8.72       | 4.12    | 1.30    | 1.100 | 0.520 | 0.163 |
| Petroleum Coke | 8.72       | 4.12    | 1.30    | 1.100 | 0.520 | 0.163 |

**Emission Rates - Controlled 98.00%**

| Raw Materials  | Short-Term |         |         |       |       |       |
|----------------|------------|---------|---------|-------|-------|-------|
|                | PM         | PM10    | PM2.5   | PM    | PM10  | PM2.5 |
|                | (lb/hr)    | (lb/hr) | (lb/hr) | (g/s) | (g/s) | (g/s) |
| Coal           | 0.174      | 0.082   | 0.026   | 0.022 | 0.010 | 0.003 |
| Petroleum Coke | 0.174      | 0.082   | 0.026   | 0.022 | 0.010 | 0.003 |

**Emission Rates - Uncontrolled**

| Raw Materials  | Long-Term |       |       |       |       |       |
|----------------|-----------|-------|-------|-------|-------|-------|
|                | PM        | PM10  | PM2.5 | PM    | PM10  | PM2.5 |
|                | (TPY)     | (TPY) | (TPY) | (g/s) | (g/s) | (g/s) |
| Coal           | 11.17     | 5.29  | 1.66  | 0.322 | 0.152 | 0.048 |
| Petroleum Coke | 11.17     | 5.29  | 1.66  | 0.322 | 0.152 | 0.048 |

**Emission Rates - Controlled 98.00%**

| Raw Materials  | Long-Term |       |       |        |        |        |
|----------------|-----------|-------|-------|--------|--------|--------|
|                | PM        | PM10  | PM2.5 | PM     | PM10   | PM2.5  |
|                | (TPY)     | (TPY) | (TPY) | (g/s)  | (g/s)  | (g/s)  |
| Coal           | 0.223     | 0.106 | 0.033 | 0.0064 | 0.0030 | 0.0010 |
| Petroleum Coke | 0.223     | 0.106 | 0.033 | 0.0064 | 0.0030 | 0.0010 |

**References:**

Emission Factor - AP42 Chapter 13.2.4 Aggregate Handling and Storage Piles  
 Belt Speed - JEA Operation Data  
 Moisture Contents - JEA Operational Data  
 Transfer Rates - JEA Operational Data

**Foster Wheeler Environmental Corporation**  
**EXCEL 7.0 Worksheet Calculation**

By: D. Graziani, P.E.  
 Date: 11/3/98

Cal. No.: 901103DJG01  
 Project No.: 7830.0020.0056

Ckd. By: Kim Evans, P.E.  
 Date: 11/10/98

Revision No.: 1

**Project:** St. Johns River Power Park PSD Permit Update  
**Subject:** Emissions Estimates for the Ship Unloading Operations (Shiphold)

**Emissions Data**

| Raw Materials  | Constant | Wind Speed<br>(MPH) | H2O<br>(%) | Particle Size Multipliers |      |       | Emission Factors (lb/ton) |        |        |
|----------------|----------|---------------------|------------|---------------------------|------|-------|---------------------------|--------|--------|
|                |          |                     |            | PM                        | PM10 | PM2.5 | PM                        | PM10   | PM2.5  |
| Coal           | 0.0032   | 8                   | 5          | 0.74                      | 0.35 | 0.11  | 0.0012                    | 0.0006 | 0.0002 |
| Petroleum Coke | 0.0032   | 8                   | 5          | 0.74                      | 0.35 | 0.11  | 0.0012                    | 0.0006 | 0.0002 |
| Limestone      | 0.0032   | 8                   | 6.5        | 0.74                      | 0.35 | 0.11  | 0.0008                    | 0.0004 | 0.0001 |

**Operating Data**

| Raw Materials  | Operating Rates |         |
|----------------|-----------------|---------|
|                | (TPH)           | (TPY)   |
| Coal           | 1500            | 5126352 |
| Petroleum Coke | 1500            | 5126352 |
| Limestone      | 1500            | 600000  |

**Emission Rates - Uncontrolled**

| Raw Materials  | Short-Term    |                 |                  |             |               |                |
|----------------|---------------|-----------------|------------------|-------------|---------------|----------------|
|                | PM<br>(lb/hr) | PM10<br>(lb/hr) | PM2.5<br>(lb/hr) | PM<br>(g/s) | PM10<br>(g/s) | PM2.5<br>(g/s) |
| Coal           | 1.81          | 0.86            | 0.27             | 0.229       | 0.108         | 0.034          |
| Petroleum Coke | 1.81          | 0.86            | 0.27             | 0.229       | 0.108         | 0.034          |
| Limestone      | 1.26          | 0.59            | 0.19             | 0.158       | 0.075         | 0.024          |

**Emission Rates - Controlled 70.00%**

| Raw Materials  | Short-Term    |                 |                  |             |               |                |
|----------------|---------------|-----------------|------------------|-------------|---------------|----------------|
|                | PM<br>(lb/hr) | PM10<br>(lb/hr) | PM2.5<br>(lb/hr) | PM<br>(g/s) | PM10<br>(g/s) | PM2.5<br>(g/s) |
| Coal           | 0.54          | 0.26            | 0.08             | 0.069       | 0.032         | 0.010          |
| Petroleum Coke | 0.54          | 0.26            | 0.08             | 0.069       | 0.032         | 0.010          |
| Limestone      | 0.38          | 0.18            | 0.06             | 0.048       | 0.022         | 0.007          |

**Emission Rates - Uncontrolled**

| Raw Materials  | Long-Term   |               |                |             |               |                |
|----------------|-------------|---------------|----------------|-------------|---------------|----------------|
|                | PM<br>(TPY) | PM10<br>(TPY) | PM2.5<br>(TPY) | PM<br>(g/s) | PM10<br>(g/s) | PM2.5<br>(g/s) |
| Coal           | 3.10        | 1.47          | 0.46           | 0.089       | 0.042         | 0.013          |
| Petroleum Coke | 3.10        | 1.47          | 0.46           | 0.089       | 0.042         | 0.013          |
| Limestone      | 0.25        | 0.12          | 0.04           | 0.007       | 0.003         | 0.001          |

**Emission Rates - Controlled 70.00%**

| Raw Materials  | Long-Term   |               |                |             |               |                |
|----------------|-------------|---------------|----------------|-------------|---------------|----------------|
|                | PM<br>(TPY) | PM10<br>(TPY) | PM2.5<br>(TPY) | PM<br>(g/s) | PM10<br>(g/s) | PM2.5<br>(g/s) |
| Coal           | 0.93        | 0.44          | 0.14           | 0.0268      | 0.0127        | 0.0040         |
| Petroleum Coke | 0.93        | 0.44          | 0.14           | 0.0268      | 0.0127        | 0.0040         |
| Limestone      | 0.08        | 0.04          | 0.01           | 0.0022      | 0.0010        | 0.0003         |

**References:**

Emission Factor - AP42 Chapter 13.2.4 Aggregate Handling and Storage Piles  
 Wind Speed - Annual Average  
 Moisture Contents - JEA Operational Data  
 Transfer Rates - JEA Operational Data

**Foster Wheeler Environmental Corporation**  
**EXCEL 7.0 Worksheet Calculation**

**By:** D. Graziani, P.E.  
**Date:** 11/3/98  
**Ckd. By:** Kim Evans, P.E.  
**Date:** 11/10/98

**Cal. No.:** 901103DJG01  
**Project No.:** 7830.0020.0056

**Revision No.:** 1

**Project:** St. Johns River Power Park PSD Permit Update  
**Subject:** Emissions Estimates for the Ship Unloader

**Emissions Data**

| Raw Materials  | Constant | Belt Speed<br>(MPH) | H2O<br>(%) | Particle Size Multipliers |      |       | Emission Factors (lb/ton) |         |         |
|----------------|----------|---------------------|------------|---------------------------|------|-------|---------------------------|---------|---------|
|                |          |                     |            | PM                        | PM10 | PM2.5 | PM                        | PM10    | PM2.5   |
| Coal           | 0.0032   | 9.32                | 5          | 0.74                      | 0.35 | 0.11  | 0.00148                   | 0.00070 | 0.00022 |
| Petroleum Coke | 0.0032   | 9.32                | 5          | 0.74                      | 0.35 | 0.11  | 0.00148                   | 0.00070 | 0.00022 |
| Limestone      | 0.0032   | 9.32                | 6.5        | 0.74                      | 0.35 | 0.11  | 0.00102                   | 0.00048 | 0.00015 |

**Operating Data**

| Raw Materials  | Operating Rates |         |
|----------------|-----------------|---------|
|                | (TPH)           | (TPY)   |
| Coal           | 1500            | 5126352 |
| Petroleum Coke | 1500            | 5126352 |
| Limestone      | 1500            | 600000  |

**Emission Rates - Uncontrolled**

| Raw Materials  | Short-Term    |                 |                  |             |               |                |                   |
|----------------|---------------|-----------------|------------------|-------------|---------------|----------------|-------------------|
|                | PM<br>(lb/hr) | PM10<br>(lb/hr) | PM2.5<br>(lb/hr) | PM<br>(g/s) | PM10<br>(g/s) | PM2.5<br>(g/s) |                   |
| Coal           | 6.64          | 3.14            | 0.99             | 0.837       | 0.396         | 0.124          | 3-Transfer Points |
| Petroleum Coke | 6.64          | 3.14            | 0.99             | 0.837       | 0.396         | 0.124          | 3-Transfer Points |
| Limestone      | 4.60          | 2.17            | 0.68             | 0.580       | 0.274         | 0.086          | 3-Transfer Points |

**Emission Rates - Controlled 85.00%**

| Raw Materials  | Short-Term    |                 |                  |             |               |                |
|----------------|---------------|-----------------|------------------|-------------|---------------|----------------|
|                | PM<br>(lb/hr) | PM10<br>(lb/hr) | PM2.5<br>(lb/hr) | PM<br>(g/s) | PM10<br>(g/s) | PM2.5<br>(g/s) |
| Coal           | 0.996         | 0.471           | 0.148            | 0.126       | 0.059         | 0.019          |
| Petroleum Coke | 0.996         | 0.471           | 0.148            | 0.126       | 0.059         | 0.019          |
| Limestone      | 0.690         | 0.326           | 0.103            | 0.087       | 0.041         | 0.013          |

**Emission Rates - Uncontrolled**

| Raw Materials  | Long-Term   |               |                |             |               |                |                   |
|----------------|-------------|---------------|----------------|-------------|---------------|----------------|-------------------|
|                | PM<br>(TPY) | PM10<br>(TPY) | PM2.5<br>(TPY) | PM<br>(g/s) | PM10<br>(g/s) | PM2.5<br>(g/s) |                   |
| Coal           | 11.344      | 5.365         | 1.686          | 0.327       | 0.154         | 0.049          | 3-Transfer Points |
| Petroleum Coke | 11.344      | 5.365         | 1.686          | 0.327       | 0.154         | 0.049          | 3-Transfer Points |
| Limestone      | 0.920       | 0.435         | 0.137          | 0.026       | 0.013         | 0.004          | 3-Transfer Points |

**Emission Rates - Controlled 85.00%**

| Raw Materials  | Long-Term   |               |                |             |               |                |
|----------------|-------------|---------------|----------------|-------------|---------------|----------------|
|                | PM<br>(TPY) | PM10<br>(TPY) | PM2.5<br>(TPY) | PM<br>(g/s) | PM10<br>(g/s) | PM2.5<br>(g/s) |
| Coal           | 1.7016      | 0.8048        | 0.2529         | 0.0490      | 0.0232        | 0.0073         |
| Petroleum Coke | 1.7016      | 0.8048        | 0.2529         | 0.0490      | 0.0232        | 0.0073         |
| Limestone      | 0.1379      | 0.0652        | 0.0205         | 0.0040      | 0.0019        | 0.0006         |

**References:**

Emission Factor - AP42 Chapter 13.2.4 Aggregate Handling and Storage Piles  
 Belt Speed - JEA Operation Data  
 Moisture Contents - JEA Operational Data  
 Transfer Rates - JEA Operational Data

**Foster Wheeler Environmental Corporation**  
**EXCEL 7.0 Worksheet Calculation**

**By:** D. Graziani, P.E.

**Date:** 11/3/98

**Ckd. By:** Kim Evans, P.E.

**Date:** 11/10/98

**Cal. No.:** 901103DJG01

**Project No.:** 7830.0020.0056

**Revision No.:** 1

**Project:** St. Johns River Power Park PSD Permit Update

**Subject:** Emissions Estimates for the Ship Unloading Operations (Unloader Hopper & Spillage Conveyor (1% Lost))

**Emissions Data**

| Raw Materials  | Constant | Wind Speed<br>(MPH) | H2O<br>(%) | Particle Size Multipliers |      |       | Emission Factors (lb/ton) |          |         |
|----------------|----------|---------------------|------------|---------------------------|------|-------|---------------------------|----------|---------|
|                |          |                     |            | PM                        | PM10 | PM2.5 | PM                        | PM10     | PM2.5   |
| Coal           | 0.0032   | 8                   | 5          | 0.74                      | 0.35 | 0.11  | 0.00121                   | 0.000572 | 0.00018 |
| Petroleum Coke | 0.0032   | 8                   | 5          | 0.74                      | 0.35 | 0.11  | 0.00121                   | 0.000572 | 0.00018 |
| Limestone      | 0.0032   | 8                   | 6.5        | 0.74                      | 0.35 | 0.11  | 0.00084                   | 0.00040  | 0.00012 |

**Operating Data**

| Raw Materials  | Operating Rates |         |
|----------------|-----------------|---------|
|                | (TPH)           | (TPY)   |
| Coal           | 1500            | 5126352 |
| Petroleum Coke | 1500            | 5126352 |
| Limestone      | 1500            | 600000  |

**Emission Rates - Uncontrolled**

| Raw Materials  | Short-Term |         |         |       |       |       |
|----------------|------------|---------|---------|-------|-------|-------|
|                | PM         | PM10    | PM2.5   | PM    | PM10  | PM2.5 |
|                | (lb/hr)    | (lb/hr) | (lb/hr) | (g/s) | (g/s) | (g/s) |
| Coal           | 1.83       | 0.87    | 0.27    | 0.231 | 0.109 | 0.034 |
| Petroleum Coke | 1.83       | 0.87    | 0.27    | 0.231 | 0.109 | 0.034 |
| Limestone      | 1.27       | 0.60    | 0.19    | 0.160 | 0.076 | 0.024 |

1-Transfer Point at 100%

1-Transfer Point at 1%

**Emission Rates - Controlled 85.00%**

| Raw Materials  | Short-Term |         |         |       |       |       |
|----------------|------------|---------|---------|-------|-------|-------|
|                | PM         | PM10    | PM2.5   | PM    | PM10  | PM2.5 |
|                | (lb/hr)    | (lb/hr) | (lb/hr) | (g/s) | (g/s) | (g/s) |
| Coal           | 0.27       | 0.13    | 0.04    | 0.035 | 0.016 | 0.005 |
| Petroleum Coke | 0.27       | 0.13    | 0.04    | 0.035 | 0.016 | 0.005 |
| Limestone      | 0.19       | 0.09    | 0.03    | 0.024 | 0.011 | 0.004 |

**Emission Rates - Uncontrolled**

| Raw Materials  | Long-Term |       |       |       |       |       |
|----------------|-----------|-------|-------|-------|-------|-------|
|                | PM        | PM10  | PM2.5 | PM    | PM10  | PM2.5 |
|                | (TPY)     | (TPY) | (TPY) | (g/s) | (g/s) | (g/s) |
| Coal           | 3.13      | 1.48  | 0.47  | 0.090 | 0.043 | 0.013 |
| Petroleum Coke | 3.13      | 1.48  | 0.47  | 0.090 | 0.043 | 0.013 |
| Limestone      | 0.25      | 0.12  | 0.04  | 0.007 | 0.003 | 0.001 |

**Emission Rates - Controlled 85.00%**

| Raw Materials  | Long-Term |       |       |        |        |        |
|----------------|-----------|-------|-------|--------|--------|--------|
|                | PM        | PM10  | PM2.5 | PM     | PM10   | PM2.5  |
|                | (TPY)     | (TPY) | (TPY) | (g/s)  | (g/s)  | (g/s)  |
| Coal           | 0.47      | 0.22  | 0.07  | 0.0135 | 0.0064 | 0.0020 |
| Petroleum Coke | 0.47      | 0.22  | 0.07  | 0.0135 | 0.0064 | 0.0020 |
| Limestone      | 0.04      | 0.02  | 0.01  | 0.0011 | 0.0005 | 0.0002 |

**References:**

Emission Factor - AP42 Chapter 13.2.4 Aggregate Handling and Storage Piles

Wind Speed - Annual Average

Moisture Contents - JEA Operational Data

Transfer Rates - JEA Operational Data

**Foster Wheeler Environmental Corporation**  
**EXCEL 7.0 Worksheet Calculation**

By: D. Graziani, P.E.  
 Date: 11/3/98

Cal. No.: 901103DJG01  
 Project No.: 7830.0020.0056

Ckd. By: Kim Evans, P.E.  
 Date: 11/10/98

Revision No.: 1

**Project:** St. Johns River Power Park PSD Permit Update  
**Subject:** Emissions Estimates for Transfer Station No. 1

**Emissions Data**

| Raw Materials  | Constant | Belt Speed<br>(MPH) | H2O<br>(%) | Particle Size Multipliers |      |       | Emission Factors (lb/ton) |         |         |
|----------------|----------|---------------------|------------|---------------------------|------|-------|---------------------------|---------|---------|
|                |          |                     |            | PM                        | PM10 | PM2.5 | PM                        | PM10    | PM2.5   |
| Coal           | 0.0032   | 9.32                | 5          | 0.74                      | 0.35 | 0.11  | 0.00148                   | 0.00070 | 0.00022 |
| Petroleum Coke | 0.0032   | 9.32                | 5          | 0.74                      | 0.35 | 0.11  | 0.00148                   | 0.00070 | 0.00022 |
| Limestone      | 0.0032   | 9.32                | 6.5        | 0.74                      | 0.35 | 0.11  | 0.00102                   | 0.00048 | 0.00015 |

**Operating Data**

| Raw Materials  | Operating Rates |         |
|----------------|-----------------|---------|
|                | (TPH)           | (TPY)   |
| Coal           | 1500            | 5126352 |
| Petroleum Coke | 1500            | 5126352 |
| Limestone      | 1500            | 600000  |

**Emission Rates - Uncontrolled**

| Raw Materials  | Short-Term    |                 |                  |             |               |                |
|----------------|---------------|-----------------|------------------|-------------|---------------|----------------|
|                | PM<br>(lb/hr) | PM10<br>(lb/hr) | PM2.5<br>(lb/hr) | PM<br>(g/s) | PM10<br>(g/s) | PM2.5<br>(g/s) |
| Coal           | 2.21          | 1.05            | 0.33             | 0.279       | 0.132         | 0.041          |
| Petroleum Coke | 2.21          | 1.05            | 0.33             | 0.279       | 0.132         | 0.041          |
| Limestone      | 1.53          | 0.72            | 0.23             | 0.193       | 0.091         | 0.029          |

**Emission Rates - Controlled 98.00%**

| Raw Materials  | Short-Term    |                 |                  |             |               |                |
|----------------|---------------|-----------------|------------------|-------------|---------------|----------------|
|                | PM<br>(lb/hr) | PM10<br>(lb/hr) | PM2.5<br>(lb/hr) | PM<br>(g/s) | PM10<br>(g/s) | PM2.5<br>(g/s) |
| Coal           | 0.044         | 0.021           | 0.007            | 0.006       | 0.003         | 0.001          |
| Petroleum Coke | 0.044         | 0.021           | 0.007            | 0.006       | 0.003         | 0.001          |
| Limestone      | 0.031         | 0.014           | 0.005            | 0.004       | 0.002         | 0.001          |

**Emission Rates - Uncontrolled**

| Raw Materials  | Long-Term   |               |                |             |               |                |
|----------------|-------------|---------------|----------------|-------------|---------------|----------------|
|                | PM<br>(TPY) | PM10<br>(TPY) | PM2.5<br>(TPY) | PM<br>(g/s) | PM10<br>(g/s) | PM2.5<br>(g/s) |
| Coal           | 3.78        | 1.79          | 0.56           | 0.1089      | 0.0515        | 0.0162         |
| Petroleum Coke | 3.78        | 1.79          | 0.56           | 0.1089      | 0.0515        | 0.0162         |
| Limestone      | 0.31        | 0.14          | 0.05           | 0.0088      | 0.0042        | 0.0013         |

**Emission Rates - Controlled 98.00%**

| Raw Materials  | Long-Term   |               |                |             |               |                |
|----------------|-------------|---------------|----------------|-------------|---------------|----------------|
|                | PM<br>(TPY) | PM10<br>(TPY) | PM2.5<br>(TPY) | PM<br>(g/s) | PM10<br>(g/s) | PM2.5<br>(g/s) |
| Coal           | 0.076       | 0.036         | 0.011          | 0.0022      | 0.0010        | 0.0003         |
| Petroleum Coke | 0.076       | 0.036         | 0.011          | 0.0022      | 0.0010        | 0.0003         |
| Limestone      | 0.006       | 0.003         | 0.001          | 0.000       | 0.000         | 0.000          |

**References:**

Emission Factor - AP42 Chapter 13.2.4 Aggregate Handling and Storage Piles  
 Belt Speed - JEA Operation Data  
 Moisture Contents - JEA Operational Data  
 Transfer Rates - JEA Operational Data

**Foster Wheeler Environmental Corporation**  
**EXCEL 7.0 Worksheet Calculation**

**By:** D. Graziani, P.E.

**Date:** 11/3/98

**Ckd. By:** Kim Evans, P.E.

**Date:** 11/10/98

**Cal. No.:** 901103DJG01

**Project No.:** 7830.0020.0056

**Revision No.:** 1

**Project:** St. Johns River Power Park PSD Permit Update

**Subject:** Emissions Estimates for Transfer Station No. 2

**Emissions Data**

| Raw Materials  | Constant | Belt Speed<br>(MPH) | H2O<br>(%) | Particle Size Multipliers |      |       | Emission Factors (lb/ton) |         |         |
|----------------|----------|---------------------|------------|---------------------------|------|-------|---------------------------|---------|---------|
|                |          |                     |            | PM                        | PM10 | PM2.5 | PM                        | PM10    | PM2.5   |
| Coal           | 0.0032   | 9.32                | 5          | 0.74                      | 0.35 | 0.11  | 0.00148                   | 0.00070 | 0.00022 |
| Petroleum Coke | 0.0032   | 9.32                | 5          | 0.74                      | 0.35 | 0.11  | 0.00148                   | 0.00070 | 0.00022 |
| Limestone      | 0.0032   | 9.32                | 6.5        | 0.74                      | 0.35 | 0.11  | 0.00102                   | 0.00048 | 0.00015 |

**Operating Data**

| Raw Materials  | Operating Rates |         |
|----------------|-----------------|---------|
|                | (TPH)           | (TPY)   |
| Coal           | 1500            | 5126352 |
| Petroleum Coke | 1500            | 5126352 |
| Limestone      | 1500            | 600000  |

**Emission Rates - Uncontrolled**

| Raw Materials  | Short-Term    |                 |                  |             |               |                |
|----------------|---------------|-----------------|------------------|-------------|---------------|----------------|
|                | PM<br>(lb/hr) | PM10<br>(lb/hr) | PM2.5<br>(lb/hr) | PM<br>(g/s) | PM10<br>(g/s) | PM2.5<br>(g/s) |
| Coal           | 2.21          | 1.05            | 0.33             | 0.279       | 0.132         | 0.041          |
| Petroleum Coke | 2.21          | 1.05            | 0.33             | 0.279       | 0.132         | 0.041          |
| Limestone      | 1.53          | 0.72            | 0.23             | 0.193       | 0.091         | 0.029          |

**Emission Rates - Controlled 98.00%**

| Raw Materials  | Short-Term    |                 |                  |             |               |                |
|----------------|---------------|-----------------|------------------|-------------|---------------|----------------|
|                | PM<br>(lb/hr) | PM10<br>(lb/hr) | PM2.5<br>(lb/hr) | PM<br>(g/s) | PM10<br>(g/s) | PM2.5<br>(g/s) |
| Coal           | 0.044         | 0.021           | 0.007            | 0.006       | 0.003         | 0.001          |
| Petroleum Coke | 0.044         | 0.021           | 0.007            | 0.006       | 0.003         | 0.001          |
| Limestone      | 0.031         | 0.014           | 0.005            | 0.004       | 0.002         | 0.001          |

**Emission Rates - Uncontrolled**

| Raw Materials  | Long-Term   |               |                |             |               |                |
|----------------|-------------|---------------|----------------|-------------|---------------|----------------|
|                | PM<br>(TPY) | PM10<br>(TPY) | PM2.5<br>(TPY) | PM<br>(g/s) | PM10<br>(g/s) | PM2.5<br>(g/s) |
| Coal           | 3.78        | 1.79          | 0.56           | 0.109       | 0.051         | 0.016          |
| Petroleum Coke | 3.78        | 1.79          | 0.56           | 0.109       | 0.051         | 0.016          |
| Limestone      | 0.31        | 0.14          | 0.05           | 0.009       | 0.004         | 0.001          |

**Emission Rates - Controlled 98.00%**

| Raw Materials  | Long-Term   |               |                |             |               |                |
|----------------|-------------|---------------|----------------|-------------|---------------|----------------|
|                | PM<br>(TPY) | PM10<br>(TPY) | PM2.5<br>(TPY) | PM<br>(g/s) | PM10<br>(g/s) | PM2.5<br>(g/s) |
| Coal           | 0.076       | 0.036         | 0.011          | 0.002       | 0.001         | 0.000          |
| Petroleum Coke | 0.076       | 0.036         | 0.011          | 0.002       | 0.001         | 0.000          |
| Limestone      | 0.006       | 0.003         | 0.001          | 0.000       | 0.000         | 0.000          |

**References:**

Emission Factor - AP42 Chapter 13.2.4 Aggregate Handling and Storage Piles

Belt Speed - JEA Operation Data

Moisture Contents - JEA Operational Data

Transfer Rates - JEA Operational Data

**Foster Wheeler Environmental Corporation**  
**EXCEL 7.0 Worksheet Calculation**

**By:** D. Graziani, P.E.

**Date:** 11/3/98

**Cal. No.:** 901103DJG01

**Project No.:** 7830.0020.0056

**Ckd. By:** Kim Evans, P.E.

**Date:** 11/10/98

**Revision No.:** 1

**Project:** St. Johns River Power Park PSD Permit Update

**Subject:** Emissions Estimates for Transfer Station No. 3 & Sample Train (5X@1%)

**Emissions Data**

| Raw Materials  | Constant | Belt Speed<br>(MPH) | H2O<br>(%) | Particle Size Multipliers |      |       | Emission Factors (lb/ton) |         |         |
|----------------|----------|---------------------|------------|---------------------------|------|-------|---------------------------|---------|---------|
|                |          |                     |            | PM                        | PM10 | PM2.5 | PM                        | PM10    | PM2.5   |
| Coal           | 0.0032   | 9.32                | 5          | 0.74                      | 0.35 | 0.11  | 0.00148                   | 0.00070 | 0.00022 |
| Petroleum Coke | 0.0032   | 9.32                | 5          | 0.74                      | 0.35 | 0.11  | 0.00148                   | 0.00070 | 0.00022 |
| Limestone      | 0.0032   | 9.32                | 6.5        | 0.74                      | 0.35 | 0.11  | 0.00102                   | 0.00048 | 0.00015 |

**Operating Data**

| Raw Materials  | Operating Rates |         |
|----------------|-----------------|---------|
|                | (TPH)           | (TPY)   |
| Coal           | 1500            | 5126352 |
| Petroleum Coke | 1500            | 5126352 |
| Limestone      | 1500            | 600000  |

**Emission Rates - Uncontrolled**

| Raw Materials  | Short-Term    |                 |                  |             |               |                |
|----------------|---------------|-----------------|------------------|-------------|---------------|----------------|
|                | PM<br>(lb/hr) | PM10<br>(lb/hr) | PM2.5<br>(lb/hr) | PM<br>(g/s) | PM10<br>(g/s) | PM2.5<br>(g/s) |
| Coal           | 2.32          | 1.10            | 0.35             | 0.293       | 0.139         | 0.044          |
| Petroleum Coke | 2.32          | 1.10            | 0.35             | 0.293       | 0.139         | 0.044          |
| Limestone      | 1.61          | 0.76            | 0.24             | 0.203       | 0.096         | 0.030          |

**Emission Rates - Controlled 98.00%**

| Raw Materials  | Short-Term    |                 |                  |             |               |                |
|----------------|---------------|-----------------|------------------|-------------|---------------|----------------|
|                | PM<br>(lb/hr) | PM10<br>(lb/hr) | PM2.5<br>(lb/hr) | PM<br>(g/s) | PM10<br>(g/s) | PM2.5<br>(g/s) |
| Coal           | 0.046         | 0.022           | 0.007            | 0.006       | 0.003         | 0.001          |
| Petroleum Coke | 0.046         | 0.022           | 0.007            | 0.006       | 0.003         | 0.001          |
| Limestone      | 0.032         | 0.015           | 0.005            | 0.004       | 0.002         | 0.001          |

**Emission Rates - Uncontrolled**

| Raw Materials  | Long-Term   |               |                |             |               |                |
|----------------|-------------|---------------|----------------|-------------|---------------|----------------|
|                | PM<br>(TPY) | PM10<br>(TPY) | PM2.5<br>(TPY) | PM<br>(g/s) | PM10<br>(g/s) | PM2.5<br>(g/s) |
| Coal           | 3.97        | 1.88          | 0.59           | 0.114       | 0.054         | 0.017          |
| Petroleum Coke | 3.97        | 1.88          | 0.59           | 0.114       | 0.054         | 0.017          |
| Limestone      | 0.32        | 0.15          | 0.05           | 0.009       | 0.004         | 0.001          |

**Emission Rates - Controlled 98.00%**

| Raw Materials  | Long-Term   |               |                |             |               |                |
|----------------|-------------|---------------|----------------|-------------|---------------|----------------|
|                | PM<br>(TPY) | PM10<br>(TPY) | PM2.5<br>(TPY) | PM<br>(g/s) | PM10<br>(g/s) | PM2.5<br>(g/s) |
| Coal           | 0.079       | 0.038         | 0.012          | 0.002       | 0.001         | 0.000          |
| Petroleum Coke | 0.079       | 0.038         | 0.012          | 0.002       | 0.001         | 0.000          |
| Limestone      | 0.006       | 0.003         | 0.001          | 0.000       | 0.000         | 0.000          |

**References:**

Emission Factor - AP42 Chapter 13.2.4 Aggregate Handling and Storage Piles

Belt Speed - JEA Operation Data

Moisture Contents - JEA Operational Data

Transfer Rates - JEA Operational Data

**Foster Wheeler Environmental Corporation**  
**EXCEL 7.0 Worksheet Calculation**

**By:** D. Graziani, P.E.  
**Date:** 11/3/98

**Cal. No.:** 901103DJG01  
**Project No.:** 7830.0020.0056

**Ckd. By:** Kim Evans, P.E.  
**Date:** 11/10/98

**Revision No.:** 1

**Project:** St. Johns River Power Park PSD Permit Update  
**Subject:** Emissions Estimates for Transfer Station No. 4

**Emissions Data**

| Raw Materials  | Constant | Belt Speed<br>(MPH) | H2O<br>(%) | Particle Size Multipliers |      |       | Emission Factors (lb/ton) |         |         |
|----------------|----------|---------------------|------------|---------------------------|------|-------|---------------------------|---------|---------|
|                |          |                     |            | PM                        | PM10 | PM2.5 | PM                        | PM10    | PM2.5   |
| Coal           | 0.0032   | 9.32                | 5          | 0.74                      | 0.35 | 0.11  | 0.00148                   | 0.00070 | 0.00022 |
| Petroleum Coke | 0.0032   | 9.32                | 5          | 0.74                      | 0.35 | 0.11  | 0.00148                   | 0.00070 | 0.00022 |
| Limestone      | 0.0032   | 9.32                | 6.5        | 0.74                      | 0.35 | 0.11  | 0.00102                   | 0.00048 | 0.00015 |

**Operating Data**

| Raw Materials  | Operating Rates |         |
|----------------|-----------------|---------|
|                | (TPH)           | (TPY)   |
| Coal           | 1500            | 5126352 |
| Petroleum Coke | 1500            | 5126352 |
| Limestone      | 0               | 0       |

**Emission Rates - Uncontrolled**

| Raw Materials  | Short-Term |         |         |       |       |       |
|----------------|------------|---------|---------|-------|-------|-------|
|                | PM         | PM10    | PM2.5   | PM    | PM10  | PM2.5 |
|                | (lb/hr)    | (lb/hr) | (lb/hr) | (g/s) | (g/s) | (g/s) |
| Coal           | 2.21       | 1.05    | 0.33    | 0.279 | 0.132 | 0.041 |
| Petroleum Coke | 2.21       | 1.05    | 0.33    | 0.279 | 0.132 | 0.041 |
| Limestone      | 0          | 0       | 0       | 0     | 0     | 0     |

**Emission Rates - Controlled 98.00%**

| Raw Materials  | Short-Term |         |         |       |       |       |
|----------------|------------|---------|---------|-------|-------|-------|
|                | PM         | PM10    | PM2.5   | PM    | PM10  | PM2.5 |
|                | (lb/hr)    | (lb/hr) | (lb/hr) | (g/s) | (g/s) | (g/s) |
| Coal           | 0.044      | 0.021   | 0.007   | 0.006 | 0.003 | 0.001 |
| Petroleum Coke | 0.044      | 0.021   | 0.007   | 0.006 | 0.003 | 0.001 |
| Limestone      | 0          | 0       | 0       | 0     | 0     | 0     |

**Emission Rates - Uncontrolled**

| Raw Materials  | Long-Term |       |       |       |       |       |
|----------------|-----------|-------|-------|-------|-------|-------|
|                | PM        | PM10  | PM2.5 | PM    | PM10  | PM2.5 |
|                | (TPY)     | (TPY) | (TPY) | (g/s) | (g/s) | (g/s) |
| Coal           | 3.78      | 1.79  | 0.56  | 0.109 | 0.051 | 0.016 |
| Petroleum Coke | 3.78      | 1.79  | 0.56  | 0.109 | 0.051 | 0.016 |
| Limestone      | 0         | 0     | 0     | 0     | 0     | 0     |

**Emission Rates - Controlled 98.00%**

| Raw Materials  | Long-Term |       |       |        |        |        |
|----------------|-----------|-------|-------|--------|--------|--------|
|                | PM        | PM10  | PM2.5 | PM     | PM10   | PM2.5  |
|                | (TPY)     | (TPY) | (TPY) | (g/s)  | (g/s)  | (g/s)  |
| Coal           | 0.076     | 0.036 | 0.011 | 0.0022 | 0.0010 | 0.0003 |
| Petroleum Coke | 0.076     | 0.036 | 0.011 | 0.0022 | 0.0010 | 0.0003 |
| Limestone      | 0         | 0     | 0     | 0      | 0      | 0      |

**References:**

Emission Factor - AP42 Chapter 13.2.4 Aggregate Handling and Storage Piles  
 Belt Speed - JEA Operation Data  
 Moisture Contents - JEA Operational Data  
 Transfer Rates - JEA Operational Data



**Foster Wheeler Environmental Corporation**  
**EXCEL 7.0 Worksheet Calculation**

**By:** D. Graziani, P.E.  
**Date:** 11/3/98

**Cal. No.:** 901103DJG01  
**Project No.:** 7830.0020.0056

**Ckd. By:** Kim Evans, P.E.  
**Date:** 11/10/98

**Revision No.:** 1

**Project:** St. Johns River Power Park PSD Permit Update  
**Subject:** Emissions Estimates for Transfer Station No. 5

**Emissions Data**

| Raw Materials  | Constant | Belt Speed<br>(MPH) | H2O<br>(%) | Particle Size Multipliers |      |       | Emission Factors (lb/ton) |         |         |
|----------------|----------|---------------------|------------|---------------------------|------|-------|---------------------------|---------|---------|
|                |          |                     |            | PM                        | PM10 | PM2.5 | PM                        | PM10    | PM2.5   |
| Coal           | 0.0032   | 9.32                | 5          | 0.74                      | 0.35 | 0.11  | 0.00148                   | 0.00070 | 0.00022 |
| Petroleum Coke | 0.0032   | 9.32                | 5          | 0.74                      | 0.35 | 0.11  | 0.00148                   | 0.00070 | 0.00022 |
| Limestone      | 0.0032   | 9.32                | 6.5        | 0.74                      | 0.35 | 0.11  | 0.00102                   | 0.00048 | 0.00015 |

**Operating Data**

| Raw Materials  | Operating Rates |         |
|----------------|-----------------|---------|
|                | (TPH)           | (TPY)   |
| Coal           | 1500            | 5126352 |
| Petroleum Coke | 1500            | 5126352 |
| Limestone      | 0               | 0       |

**Emission Rates - Uncontrolled**

| Raw Materials  | Short-Term    |                 |                  |             |               |                |
|----------------|---------------|-----------------|------------------|-------------|---------------|----------------|
|                | PM<br>(lb/hr) | PM10<br>(lb/hr) | PM2.5<br>(lb/hr) | PM<br>(g/s) | PM10<br>(g/s) | PM2.5<br>(g/s) |
| Coal           | 2.21          | 1.05            | 0.33             | 0.279       | 0.132         | 0.041          |
| Petroleum Coke | 2.21          | 1.05            | 0.33             | 0.279       | 0.132         | 0.041          |
| Limestone      | 0             | 0               | 0                | 0           | 0             | 0              |

**Emission Rates - Controlled 98.00%**

| Raw Materials  | Short-Term    |                 |                  |             |               |                |
|----------------|---------------|-----------------|------------------|-------------|---------------|----------------|
|                | PM<br>(lb/hr) | PM10<br>(lb/hr) | PM2.5<br>(lb/hr) | PM<br>(g/s) | PM10<br>(g/s) | PM2.5<br>(g/s) |
| Coal           | 0.044         | 0.021           | 0.007            | 0.006       | 0.003         | 0.001          |
| Petroleum Coke | 0.044         | 0.021           | 0.007            | 0.006       | 0.003         | 0.001          |
| Limestone      | 0             | 0               | 0                | 0           | 0             | 0              |

**Emission Rates - Uncontrolled**

| Raw Materials  | Long-Term   |               |                |             |               |                |
|----------------|-------------|---------------|----------------|-------------|---------------|----------------|
|                | PM<br>(TPY) | PM10<br>(TPY) | PM2.5<br>(TPY) | PM<br>(g/s) | PM10<br>(g/s) | PM2.5<br>(g/s) |
| Coal           | 3.78        | 1.79          | 0.56           | 0.109       | 0.051         | 0.016          |
| Petroleum Coke | 3.78        | 1.79          | 0.56           | 0.109       | 0.051         | 0.016          |
| Limestone      | 0           | 0             | 0              | 0           | 0             | 0              |

**Emission Rates - Controlled 98.00%**

| Raw Materials  | Long-Term   |               |                |             |               |                |
|----------------|-------------|---------------|----------------|-------------|---------------|----------------|
|                | PM<br>(TPY) | PM10<br>(TPY) | PM2.5<br>(TPY) | PM<br>(g/s) | PM10<br>(g/s) | PM2.5<br>(g/s) |
| Coal           | 0.076       | 0.036         | 0.011          | 0.0022      | 0.0010        | 0.0003         |
| Petroleum Coke | 0.076       | 0.036         | 0.011          | 0.0022      | 0.0010        | 0.0003         |
| Limestone      | 0           | 0             | 0              | 0           | 0             | 0              |

**References:**

Emission Factor - AP42 Chapter 13.2.4 Aggregate Handling and Storage Piles  
 Belt Speed - JEA Operation Data  
 Moisture Contents - JEA Operational Data  
 Transfer Rates - JEA Operational Data

**Foster Wheeler Environmental Corporation**  
**EXCEL 7.0 Worksheet Calculation**

**By:** D. Graziani, P.E.  
**Date:** 11/3/98

**Cal. No.:** 901103DJG01  
**Project No.:** 7830.0020.0056

**Ckd. By:** Kim Evans, P.E.  
**Date:** 11/10/98

**Revision No.:** 1

**Project:** St. Johns River Power Park PSD Permit Update (Total Emissions - NGS Alt #1)  
**Subject:** Emissions Estimates for Transfer Station No. 6

**Emissions Data**

| Raw Materials  | Constant | Belt Speed<br>(MPH) | H2O<br>(%) | Particle Size Multipliers |      |       | Emission Factors (lb/ton) |         |         |
|----------------|----------|---------------------|------------|---------------------------|------|-------|---------------------------|---------|---------|
|                |          |                     |            | PM                        | PM10 | PM2.5 | PM                        | PM10    | PM2.5   |
| Coal           | 0.0032   | 7.43                | 5          | 0.74                      | 0.35 | 0.11  | 0.00110                   | 0.00052 | 0.00016 |
| Petroleum Coke | 0.0032   | 7.43                | 5          | 0.74                      | 0.35 | 0.11  | 0.00110                   | 0.00052 | 0.00016 |
| Limestone      | 0.0032   | 7.43                | 6.5        | 0.74                      | 0.35 | 0.11  | 0.00076                   | 0.00036 | 0.00011 |

**Operating Data**

| Raw Materials  | Operating Rates |         |
|----------------|-----------------|---------|
|                | (TPH)           | (TPY)   |
| Coal           | 2000            | 5126352 |
| Petroleum Coke | 2000            | 5126352 |
| Limestone      | 0               | 0       |

**Emission Rates - Uncontrolled**

| Raw Materials  | Short-Term    |                 |                  |             |               |                |
|----------------|---------------|-----------------|------------------|-------------|---------------|----------------|
|                | PM<br>(lb/hr) | PM10<br>(lb/hr) | PM2.5<br>(lb/hr) | PM<br>(g/s) | PM10<br>(g/s) | PM2.5<br>(g/s) |
| Coal           | 2.20          | 1.04            | 0.33             | 0.277       | 0.131         | 0.041          |
| Petroleum Coke | 2.20          | 1.04            | 0.33             | 0.277       | 0.131         | 0.041          |
| Limestone      | 0             | 0               | 0                | 0           | 0             | 0              |

**Emission Rates - Controlled 98.00%**

| Raw Materials  | Short-Term    |                 |                  |             |               |                |
|----------------|---------------|-----------------|------------------|-------------|---------------|----------------|
|                | PM<br>(lb/hr) | PM10<br>(lb/hr) | PM2.5<br>(lb/hr) | PM<br>(g/s) | PM10<br>(g/s) | PM2.5<br>(g/s) |
| Coal           | 0.044         | 0.021           | 0.007            | 0.006       | 0.003         | 0.001          |
| Petroleum Coke | 0.044         | 0.021           | 0.007            | 0.006       | 0.003         | 0.001          |
| Limestone      | 0             | 0               | 0                | 0           | 0             | 0              |

**Emission Rates - Uncontrolled**

| Raw Materials  | Long-Term   |               |                |             |               |                |
|----------------|-------------|---------------|----------------|-------------|---------------|----------------|
|                | PM<br>(TPY) | PM10<br>(TPY) | PM2.5<br>(TPY) | PM<br>(g/s) | PM10<br>(g/s) | PM2.5<br>(g/s) |
| Coal           | 2.82        | 1.33          | 0.42           | 0.081       | 0.038         | 0.012          |
| Petroleum Coke | 2.82        | 1.33          | 0.42           | 0.081       | 0.038         | 0.012          |
| Limestone      | 0           | 0             | 0              | 0           | 0             | 0              |

**Emission Rates - Controlled 98.00%**

| Raw Materials  | Long-Term   |               |                |             |               |                |
|----------------|-------------|---------------|----------------|-------------|---------------|----------------|
|                | PM<br>(TPY) | PM10<br>(TPY) | PM2.5<br>(TPY) | PM<br>(g/s) | PM10<br>(g/s) | PM2.5<br>(g/s) |
| Coal           | 0.056       | 0.027         | 0.008          | 0.00162     | 0.00077       | 0.00024        |
| Petroleum Coke | 0.056       | 0.027         | 0.008          | 0.00162     | 0.00077       | 0.00024        |
| Limestone      | 0           | 0             | 0              | 0           | 0             | 0              |

**References:**

Emission Factor - AP42 Chapter 13.2.4 Aggregate Handling and Storage Piles  
 Belt Speed - JEA Operation Data  
 Moisture Contents - JEA Operational Data  
 Transfer Rates - JEA Operational Data

**Foster Wheeler Environmental Corporation**  
**EXCEL 7.0 Worksheet Calculation**

**By:** D. Graziani, P.E.

**Date:** 11/3/98

**Ckd. By:** Kim Evans, P.E.

**Date:** 11/10/98

**Cal. No.:** 901103DJG01

**Project No.:** 7830.0020.0056

**Revision No.:** 1

**Project:** St. Johns River Power Park PSD Permit Update

**Subject:** Emissions Estimates for Transfer Station No. 7

**Emissions Data**

| Raw Materials  | Constant | Belt Speed<br>(MPH) | H2O<br>(%) | Particle Size Multipliers |      |       | Emission Factors (lb/ton) |         |         |
|----------------|----------|---------------------|------------|---------------------------|------|-------|---------------------------|---------|---------|
|                |          |                     |            | PM                        | PM10 | PM2.5 | PM                        | PM10    | PM2.5   |
| Coal           | 0.0032   | 7.43                | 5          | 0.74                      | 0.35 | 0.11  | 0.00110                   | 0.00052 | 0.00016 |
| Petroleum Coke | 0.0032   | 7.43                | 5          | 0.74                      | 0.35 | 0.11  | 0.00110                   | 0.00052 | 0.00016 |
| Limestone      | 0.0032   | 7.43                | 6.5        | 0.74                      | 0.35 | 0.11  | 0.00076                   | 0.00036 | 0.00011 |

**Operating Data**

| Raw Materials  | Operating Rates |         |
|----------------|-----------------|---------|
|                | (TPH)           | (TPY)   |
| Coal           | 2000            | 5126352 |
| Petroleum Coke | 2000            | 5126352 |
| Limestone      | 0               | 0       |

**Emission Rates - Uncontrolled**

| Raw Materials  | Short-Term    |                 |                  |             |               |                |
|----------------|---------------|-----------------|------------------|-------------|---------------|----------------|
|                | PM<br>(lb/hr) | PM10<br>(lb/hr) | PM2.5<br>(lb/hr) | PM<br>(g/s) | PM10<br>(g/s) | PM2.5<br>(g/s) |
| Coal           | 2.20          | 1.04            | 0.33             | 0.277       | 0.131         | 0.041          |
| Petroleum Coke | 2.20          | 1.04            | 0.33             | 0.277       | 0.131         | 0.041          |
| Limestone      | 0             | 0               | 0                | 0           | 0             | 0              |

**Emission Rates - Controlled 98.00%**

| Raw Materials  | Short-Term    |                 |                  |             |               |                |
|----------------|---------------|-----------------|------------------|-------------|---------------|----------------|
|                | PM<br>(lb/hr) | PM10<br>(lb/hr) | PM2.5<br>(lb/hr) | PM<br>(g/s) | PM10<br>(g/s) | PM2.5<br>(g/s) |
| Coal           | 0.044         | 0.021           | 0.007            | 0.0055      | 0.0026        | 0.0008         |
| Petroleum Coke | 0.044         | 0.021           | 0.007            | 0.0055      | 0.0026        | 0.0008         |
| Limestone      | 0             | 0               | 0                | 0           | 0             | 0              |

**Emission Rates - Uncontrolled**

| Raw Materials  | Long-Term   |               |                |             |               |                |
|----------------|-------------|---------------|----------------|-------------|---------------|----------------|
|                | PM<br>(TPY) | PM10<br>(TPY) | PM2.5<br>(TPY) | PM<br>(g/s) | PM10<br>(g/s) | PM2.5<br>(g/s) |
| Coal           | 2.82        | 1.33          | 0.42           | 0.081       | 0.038         | 0.012          |
| Petroleum Coke | 2.82        | 1.33          | 0.42           | 0.081       | 0.038         | 0.012          |
| Limestone      | 0           | 0             | 0              | 0           | 0             | 0              |

**Emission Rates - Controlled 98.00%**

| Raw Materials  | Long-Term   |               |                |             |               |                |
|----------------|-------------|---------------|----------------|-------------|---------------|----------------|
|                | PM<br>(TPY) | PM10<br>(TPY) | PM2.5<br>(TPY) | PM<br>(g/s) | PM10<br>(g/s) | PM2.5<br>(g/s) |
| Coal           | 0.056       | 0.027         | 0.008          | 0.00162     | 0.00077       | 0.00024        |
| Petroleum Coke | 0.056       | 0.027         | 0.008          | 0.00162     | 0.00077       | 0.00024        |
| Limestone      | 0           | 0             | 0              | 0           | 0             | 0              |

**References:**

Emission Factor - AP42 Chapter 13.2.4 Aggregate Handling and Storage Piles

Belt Speed - JEA Operation Data

Moisture Contents - JEA Operational Data

Transfer Rates - JEA Operational Data

**Foster Wheeler Environmental Corporation  
EXCEL 7.0 Worksheet Calculation**

**By:** D. Graziani, P.E.  
**Date:** 11/3/98

**Cal. No.:** 901103DJG01  
**Project No.:** 7830.0020.0056

**Ckd. By:** Kim Evans, P.E.  
**Date:** 11/10/98

**Revision No.:** 1

**Project:** St. Johns River Power Park PSD Permit Update

**Subject:** Emissions Estimates for the 9GC-04 to 9GC-05 Transfer Tower (Gypsum System)

**Emissions Data**

| Raw Materials | Constant | Belt Speed<br>(MPH) | H2O<br>(%) | Particle Size Multipliers |      |       | Emission Factors (lb/ton) |          |          |
|---------------|----------|---------------------|------------|---------------------------|------|-------|---------------------------|----------|----------|
|               |          |                     |            | PM                        | PM10 | PM2.5 | PM                        | PM10     | PM2.5    |
| Gypsum        | 0.0032   | 1.45                | 10         | 0.74                      | 0.35 | 0.11  | 5E-05                     | 2.36E-05 | 7.43E-06 |

**Operating Data**

| Transfer Point | Operating Rates |         |
|----------------|-----------------|---------|
|                | (TPH)           | (TPY)   |
| Gypsum         | 144             | 1261440 |

**Emission Rates - Uncontrolled**

| Raw Materials | Short-Term    |                 |                  |             |               |                |
|---------------|---------------|-----------------|------------------|-------------|---------------|----------------|
|               | PM<br>(lb/hr) | PM10<br>(lb/hr) | PM2.5<br>(lb/hr) | PM<br>(g/s) | PM10<br>(g/s) | PM2.5<br>(g/s) |
| Gypsum        | 0.01          | 0.00            | 0.00             | 0.00091     | 0.00043       | 0.00013        |

**Emission Rates - Controlled 0.00%**

| Raw Materials | Short-Term    |                 |                  |             |               |                |
|---------------|---------------|-----------------|------------------|-------------|---------------|----------------|
|               | PM<br>(lb/hr) | PM10<br>(lb/hr) | PM2.5<br>(lb/hr) | PM<br>(g/s) | PM10<br>(g/s) | PM2.5<br>(g/s) |
| Gypsum        | 0.00720       | 0.00340         | 0.00107          | 0.00091     | 0.00043       | 0.00013        |

**Emission Rates - Uncontrolled**

| Raw Materials | Long-Term   |               |                |             |               |                |
|---------------|-------------|---------------|----------------|-------------|---------------|----------------|
|               | PM<br>(TPY) | PM10<br>(TPY) | PM2.5<br>(TPY) | PM<br>(g/s) | PM10<br>(g/s) | PM2.5<br>(g/s) |
| Gypsum        | 0.03        | 0.01          | 0.00           | 0.00091     | 0.00043       | 0.00013        |

**Emission Rates - Controlled 0.00%**

| Raw Materials | Long-Term   |               |                |             |               |                |
|---------------|-------------|---------------|----------------|-------------|---------------|----------------|
|               | PM<br>(TPY) | PM10<br>(TPY) | PM2.5<br>(TPY) | PM<br>(g/s) | PM10<br>(g/s) | PM2.5<br>(g/s) |
| Gypsum        | 0.03152     | 0.01491       | 0.00468        | 0.00091     | 0.00043       | 0.00013        |

**References:**

Emission Factor - AP42 Chapter 13.2.4 Aggregate Handling and Storage Piles  
Belt Speed - JEA Operation Data  
Moisture Contents - JEA Operational Data  
Transfer Rates - JEA Operational Data

Foster Wheeler Environmental Corporation  
EXCEL 7.0 Worksheet Calculation

By: D. Graziani, P.E.

Date: 11/3/98

Cal. No.: 901103DJG01

Project No.: 7830.0020.0056

Ckd. By: Kim Evans, P.E.

Date: 11/10/98

Revision No.: 1

Project: St. Johns River Power Park PSD Permit Update

Subject: Emissions Estimates for Fuel Transfer Building

Emissions Data

| Raw Materials  | Constant | Belt Speed<br>(MPH) | H2O<br>(%) | Particle Size Multipliers |      |       | Emission Factors (lb/ton) |         |         |
|----------------|----------|---------------------|------------|---------------------------|------|-------|---------------------------|---------|---------|
|                |          |                     |            | PM                        | PM10 | PM2.5 | PM                        | PM10    | PM2.5   |
| Coal           | 0.0032   | 7.38                | 5          | 0.74                      | 0.35 | 0.11  | 0.00109                   | 0.00052 | 0.00016 |
| Petroleum Coke | 0.0032   | 7.38                | 5          | 0.74                      | 0.35 | 0.11  | 0.00109                   | 0.00052 | 0.00016 |

Operating Data

| Raw Materials  | Operating Rates |         |
|----------------|-----------------|---------|
|                | (TPH)           | (TPY)   |
| Coal           | 4000            | 5126352 |
| Petroleum Coke | 4000            | 5126352 |

Emission Rates - Uncontrolled

| Raw Materials  | Short-Term    |                 |                  |             |               |                |
|----------------|---------------|-----------------|------------------|-------------|---------------|----------------|
|                | PM<br>(lb/hr) | PM10<br>(lb/hr) | PM2.5<br>(lb/hr) | PM<br>(g/s) | PM10<br>(g/s) | PM2.5<br>(g/s) |
| Coal           | 4.36          | 2.06            | 0.65             | 0.550       | 0.260         | 0.082          |
| Petroleum Coke | 4.36          | 2.06            | 0.65             | 0.550       | 0.260         | 0.082          |

Emission Rates - Controlled 85.00%

| Raw Materials  | Short-Term    |                 |                  |             |               |                |
|----------------|---------------|-----------------|------------------|-------------|---------------|----------------|
|                | PM<br>(lb/hr) | PM10<br>(lb/hr) | PM2.5<br>(lb/hr) | PM<br>(g/s) | PM10<br>(g/s) | PM2.5<br>(g/s) |
| Coal           | 0.6539        | 0.3093          | 0.0972           | 0.0825      | 0.0390        | 0.0123         |
| Petroleum Coke | 0.6539        | 0.3093          | 0.0972           | 0.0825      | 0.0390        | 0.0123         |

Emission Rates - Uncontrolled

| Raw Materials  | Long-Term   |               |                |             |               |                |
|----------------|-------------|---------------|----------------|-------------|---------------|----------------|
|                | PM<br>(TPY) | PM10<br>(TPY) | PM2.5<br>(TPY) | PM<br>(g/s) | PM10<br>(g/s) | PM2.5<br>(g/s) |
| Coal           | 2.79        | 1.32          | 0.42           | 0.080       | 0.038         | 0.012          |
| Petroleum Coke | 2.79        | 1.32          | 0.42           | 0.080       | 0.038         | 0.012          |

Emission Rates - Controlled 85.00%

| Raw Materials  | Long-Term   |               |                |             |               |                |
|----------------|-------------|---------------|----------------|-------------|---------------|----------------|
|                | PM<br>(TPY) | PM10<br>(TPY) | PM2.5<br>(TPY) | PM<br>(g/s) | PM10<br>(g/s) | PM2.5<br>(g/s) |
| Coal           | 0.419       | 0.198         | 0.062          | 0.01207     | 0.00571       | 0.00179        |
| Petroleum Coke | 0.419       | 0.198         | 0.062          | 0.01207     | 0.00571       | 0.00179        |

References:

Emission Factor - AP42 Chapter 13.2.4 Aggregate Handling and Storage Piles

Belt Speed - JEA Operation Data

Moisture Contents - JEA Operational Data

Transfer Rates - JEA Operational Data

**Foster Wheeler Environmental Corporation**  
**EXCEL 7.0 Worksheet Calculation**

**By:** D. Graziani, P.E.  
**Date:** 11/3/98

**Cal. No.:** 901103DJG01  
**Project No.:** 7830.0020.0056

**Ckd. By:** Kim Evans, P.E.  
**Date:** 11/10/98

**Revision No.:** 1

**Project:** St. Johns River Power Park PSD Permit Update  
**Subject:** Emissions Estimates for Stacker - 3 Transfer Points

**Emissions Data**

| Raw Materials  | Constant | Belt Speed<br>(MPH) | H2O<br>(%) | Particle Size Multipliers |      |       | Emission Factors (lb/ton) |         |         |
|----------------|----------|---------------------|------------|---------------------------|------|-------|---------------------------|---------|---------|
|                |          |                     |            | PM                        | PM10 | PM2.5 | PM                        | PM10    | PM2.5   |
| Coal           | 0.0032   | 9.32                | 5          | 0.74                      | 0.35 | 0.11  | 0.00148                   | 0.00070 | 0.00022 |
| Petroleum Coke | 0.0032   | 9.32                | 5          | 0.74                      | 0.35 | 0.11  | 0.00148                   | 0.00070 | 0.00022 |
| Limestone      | 0.0032   | 9.32                | 6.5        | 0.74                      | 0.35 | 0.11  | 0.00102                   | 0.00048 | 0.00015 |

**Operating Data**

| Raw Materials  | Operating Rates |         |
|----------------|-----------------|---------|
|                | (TPH)           | (TPY)   |
| Coal           | 1500            | 5126352 |
| Petroleum Coke | 1500            | 5126352 |
| Limestone      | 1500            | 600000  |

**Emission Rates - Uncontrolled**

| Raw Materials  | Short-Term    |                 |                  |             |               |                |                   |
|----------------|---------------|-----------------|------------------|-------------|---------------|----------------|-------------------|
|                | PM<br>(lb/hr) | PM10<br>(lb/hr) | PM2.5<br>(lb/hr) | PM<br>(g/s) | PM10<br>(g/s) | PM2.5<br>(g/s) |                   |
| Coal           | 6.64          | 3.14            | 0.99             | 0.837       | 0.396         | 0.124          | 3-Transfer Points |
| Petroleum Coke | 6.64          | 3.14            | 0.99             | 0.837       | 0.396         | 0.124          | 3-Transfer Points |
| Limestone      | 4.60          | 2.17            | 0.68             | 0.580       | 0.274         | 0.086          | 3-Transfer Points |

**Emission Rates - Controlled 82.67%**

| Raw Materials  | Short-Term    |                 |                  |             |               |                |
|----------------|---------------|-----------------|------------------|-------------|---------------|----------------|
|                | PM<br>(lb/hr) | PM10<br>(lb/hr) | PM2.5<br>(lb/hr) | PM<br>(g/s) | PM10<br>(g/s) | PM2.5<br>(g/s) |
| Coal           | 1.151         | 0.544           | 0.171            | 0.145       | 0.069         | 0.022          |
| Petroleum Coke | 1.151         | 0.544           | 0.171            | 0.145       | 0.069         | 0.022          |
| Limestone      | 0.797         | 0.377           | 0.118            | 0.101       | 0.048         | 0.015          |

**Emission Rates - Uncontrolled**

| Raw Materials  | Long-Term   |               |                |             |               |                |                   |
|----------------|-------------|---------------|----------------|-------------|---------------|----------------|-------------------|
|                | PM<br>(TPY) | PM10<br>(TPY) | PM2.5<br>(TPY) | PM<br>(g/s) | PM10<br>(g/s) | PM2.5<br>(g/s) |                   |
| Coal           | 11.34       | 5.37          | 1.69           | 0.327       | 0.154         | 0.049          | 3-Transfer Points |
| Petroleum Coke | 11.34       | 5.37          | 1.69           | 0.327       | 0.154         | 0.049          | 3-Transfer Points |
| Limestone      | 0.92        | 0.43          | 0.14           | 0.026       | 0.013         | 0.004          | 3-Transfer Points |

**Emission Rates - Controlled 82.67%**

| Raw Materials  | Long-Term   |               |                |             |               |                |
|----------------|-------------|---------------|----------------|-------------|---------------|----------------|
|                | PM<br>(TPY) | PM10<br>(TPY) | PM2.5<br>(TPY) | PM<br>(g/s) | PM10<br>(g/s) | PM2.5<br>(g/s) |
| Coal           | 1.966       | 0.930         | 0.292          | 0.057       | 0.027         | 0.008          |
| Petroleum Coke | 1.966       | 0.930         | 0.292          | 0.057       | 0.027         | 0.008          |
| Limestone      | 0.159       | 0.075         | 0.024          | 0.005       | 0.002         | 0.001          |

**References:**

Emission Factor - AP42 Chapter 13.2.4 Aggregate Handling and Storage Piles  
 Belt Speed - JEA Operation Data  
 Moisture Contents - JEA Operational Data  
 Transfer Rates - JEA Operational Data

**Foster Wheeler Environmental Corporation**  
**EXCEL 7.0 Worksheet Calculation**

**By:** D. Graziani, P.E.  
**Date:** 11/3/98

**Cal. No.:** 901103DJG01  
**Project No.:** 7830.0020.0056

**Ckd. By:** Kim Evans, P.E.  
**Date:** 11/10/98

**Revision No.:** 1

**Project:** St. Johns River Power Park PSD Permit Update  
**Subject:** Emissions Estimates for Reclaimer - Three Transfer Points

**Emissions Data**

| Raw Materials  | Constant | Belt Speed<br>(MPH) | H2O<br>(%) | Particle Size Multipliers |      |       | Emission Factors (lb/ton) |         |         |
|----------------|----------|---------------------|------------|---------------------------|------|-------|---------------------------|---------|---------|
|                |          |                     |            | PM                        | PM10 | PM2.5 | PM                        | PM10    | PM2.5   |
| Coal           | 0.0032   | 9.32                | 5          | 0.74                      | 0.35 | 0.11  | 0.00148                   | 0.00070 | 0.00022 |
| Petroleum Coke | 0.0032   | 9.32                | 5          | 0.74                      | 0.35 | 0.11  | 0.00148                   | 0.00070 | 0.00022 |
| Limestone      | 0.0032   | 9.32                | 6.5        | 0.74                      | 0.35 | 0.11  | 0.00102                   | 0.00048 | 0.00015 |

**Operating Data**

| Raw Materials  | Operating Rates |         |
|----------------|-----------------|---------|
|                | (TPH)           | (TPY)   |
| Coal           | 2000            | 5126352 |
| Petroleum Coke | 2000            | 5126352 |
| Limestone      | 0               | 0       |

**Emission Rates - Uncontrolled**

| Raw Materials  | Short-Term    |                 |                  |             |               |                |
|----------------|---------------|-----------------|------------------|-------------|---------------|----------------|
|                | PM<br>(lb/hr) | PM10<br>(lb/hr) | PM2.5<br>(lb/hr) | PM<br>(g/s) | PM10<br>(g/s) | PM2.5<br>(g/s) |
| Coal           | 8.85          | 4.19            | 1.32             | 1.116       | 0.528         | 0.166          |
| Petroleum Coke | 8.85          | 4.19            | 1.32             | 1.116       | 0.528         | 0.166          |
| Limestone      | 0             | 0               | 0                | 0           | 0             | 0              |

**Emission Rates - Controlled 89.67%**

| Raw Materials  | Short-Term    |                 |                  |             |               |                |
|----------------|---------------|-----------------|------------------|-------------|---------------|----------------|
|                | PM<br>(lb/hr) | PM10<br>(lb/hr) | PM2.5<br>(lb/hr) | PM<br>(g/s) | PM10<br>(g/s) | PM2.5<br>(g/s) |
| Coal           | 0.915         | 0.433           | 0.136            | 0.115       | 0.055         | 0.017          |
| Petroleum Coke | 0.915         | 0.433           | 0.136            | 0.115       | 0.055         | 0.017          |
| Limestone      | 0             | 0               | 0                | 0           | 0             | 0              |

**Emission Rates - Uncontrolled**

| Raw Materials  | Long-Term   |               |                |             |               |                |
|----------------|-------------|---------------|----------------|-------------|---------------|----------------|
|                | PM<br>(TPY) | PM10<br>(TPY) | PM2.5<br>(TPY) | PM<br>(g/s) | PM10<br>(g/s) | PM2.5<br>(g/s) |
| Coal           | 11.34       | 5.37          | 1.69           | 0.327       | 0.154         | 0.049          |
| Petroleum Coke | 11.34       | 5.37          | 1.69           | 0.327       | 0.154         | 0.049          |
| Limestone      | 0.00        | 0.00          | 0.00           | 0.000       | 0.000         | 0.000          |

**Emission Rates - Controlled 89.67%**

| Raw Materials  | Long-Term   |               |                |             |               |                |
|----------------|-------------|---------------|----------------|-------------|---------------|----------------|
|                | PM<br>(TPY) | PM10<br>(TPY) | PM2.5<br>(TPY) | PM<br>(g/s) | PM10<br>(g/s) | PM2.5<br>(g/s) |
| Coal           | 1.172       | 0.554         | 0.174          | 0.0338      | 0.0160        | 0.0050         |
| Petroleum Coke | 1.172       | 0.554         | 0.174          | 0.0338      | 0.0160        | 0.0050         |
| Limestone      | 0.000       | 0.000         | 0.000          | 0.0000      | 0.0000        | 0.0000         |

**References:**

Emission Factor - AP42 Chapter 13.2.4 Aggregate Handling and Storage Piles  
 Belt Speed - JEA Operation Data  
 Moisture Contents - JEA Operational Data  
 Transfer Rates - JEA Operational Data

**Foster Wheeler Environmental Corporation**  
**EXCEL 7.0 Worksheet Calculation**

**By:** D. Graziani, P.E.

**Date:** 11/3/98

**Cal. No.:** 901103DJG01

**Project No.:** 7830.0020.0056

**Ckd. By:** Kim Evans, P.E.

**Date:** 11/10/98

**Revision No.:** 1

**Project:** St. Johns River Power Park PSD Permit Update

**Subject:** Emissions Estimates for Stack/Reclaimer - 3 Transfer Points

**Emissions Data**

| Raw Materials  | Constant | Belt Speed<br>(MPH) | H2O<br>(%) | Particle Size Multipliers |      |       | Emission Factors (lb/ton) |         |         |
|----------------|----------|---------------------|------------|---------------------------|------|-------|---------------------------|---------|---------|
|                |          |                     |            | PM                        | PM10 | PM2.5 | PM                        | PM10    | PM2.5   |
| Coal           | 0.0032   | 7.43                | 5          | 0.74                      | 0.35 | 0.11  | 0.00110                   | 0.00052 | 0.00016 |
| Petroleum Coke | 0.0032   | 7.43                | 5          | 0.74                      | 0.35 | 0.11  | 0.00110                   | 0.00052 | 0.00016 |
| Limestone      | 0.0032   | 7.43                | 6.5        | 0.74                      | 0.35 | 0.11  | 0.00076                   | 0.00036 | 0.00011 |

**Operating Data**

| Raw Materials  | Operating Rates |         |
|----------------|-----------------|---------|
|                | (TPH)           | (TPY)   |
| Coal           | 4000            | 5126352 |
| Petroleum Coke | 4000            | 5126352 |
| Limestone      | 0               | 0       |

**Emission Rates - Uncontrolled**

| Raw Materials  | Short-Term    |                 |                  |             |               |                |
|----------------|---------------|-----------------|------------------|-------------|---------------|----------------|
|                | PM<br>(lb/hr) | PM10<br>(lb/hr) | PM2.5<br>(lb/hr) | PM<br>(g/s) | PM10<br>(g/s) | PM2.5<br>(g/s) |
| Coal           | 13.19         | 6.24            | 1.96             | 1.66        | 0.79          | 0.25           |
| Petroleum Coke | 13.19         | 6.24            | 1.96             | 1.66        | 0.79          | 0.25           |
| Limestone      | 0             | 0               | 0                | 0           | 0             | 0              |

3-Transfer Points (in/out)

3-Transfer Points (in/out)

**Emission Rates - Controlled 82.67%**

| Raw Materials  | Short-Term    |                 |                  |             |               |                |
|----------------|---------------|-----------------|------------------|-------------|---------------|----------------|
|                | PM<br>(lb/hr) | PM10<br>(lb/hr) | PM2.5<br>(lb/hr) | PM<br>(g/s) | PM10<br>(g/s) | PM2.5<br>(g/s) |
| Coal           | 2.286         | 1.081           | 0.340            | 0.288       | 0.136         | 0.043          |
| Petroleum Coke | 2.286         | 1.081           | 0.340            | 0.288       | 0.136         | 0.043          |
| Limestone      | 0             | 0               | 0                | 0           | 0             | 0              |

**Emission Rates - Uncontrolled**

| Raw Materials  | Long-Term   |               |                |             |               |                |
|----------------|-------------|---------------|----------------|-------------|---------------|----------------|
|                | PM<br>(TPY) | PM10<br>(TPY) | PM2.5<br>(TPY) | PM<br>(g/s) | PM10<br>(g/s) | PM2.5<br>(g/s) |
| Coal           | 8.45        | 4.00          | 1.26           | 0.243       | 0.115         | 0.036          |
| Petroleum Coke | 8.45        | 4.00          | 1.26           | 0.243       | 0.115         | 0.036          |
| Limestone      | 0           | 0             | 0              | 0           | 0             | 0              |

**Emission Rates - Controlled 82.67%**

| Raw Materials  | Long-Term   |               |                |             |               |                |
|----------------|-------------|---------------|----------------|-------------|---------------|----------------|
|                | PM<br>(TPY) | PM10<br>(TPY) | PM2.5<br>(TPY) | PM<br>(g/s) | PM10<br>(g/s) | PM2.5<br>(g/s) |
| Coal           | 1.465       | 0.693         | 0.218          | 0.042       | 0.020         | 0.006          |
| Petroleum Coke | 1.465       | 0.693         | 0.218          | 0.042       | 0.020         | 0.006          |
| Limestone      | 0           | 0             | 0              | 0           | 0             | 0              |

**References:**

Emission Factor - AP42 Chapter 13.2.4 Aggregate Handling and Storage Piles

Belt Speed - JEA Operation Data

Moisture Contents - JEA Operational Data

Transfer Rates - JEA Operational Data



**Foster Wheeler Environmental Corporation**  
**EXCEL 7.0 Worksheet Calculation**

**By:** D. Graziani, P.E.

**Date:** 11/3/98

**Ckd. By:** Kim Evans, P.E.

**Date:** 11/10/98

**Cal. No.:** 901103DJG01

**Project No.:** 7830.0020.0056

**Revision No.:** 1

**Project:** St. Johns River Power Park PSD Permit Update

**Subject:** Emissions Estimates for Petroleum Coke Reclaim - Five Transfer Points

**Emissions Data**

| Raw Materials  | Constant | Belt Speed<br>(MPH) | H2O<br>(%) | Particle Size Multipliers |      |       | Emission Factors (lb/ton) |          |          |
|----------------|----------|---------------------|------------|---------------------------|------|-------|---------------------------|----------|----------|
|                |          |                     |            | PM                        | PM10 | PM2.5 | PM                        | PM10     | PM2.5    |
| Petroleum Coke | 0.0032   | 6.14                | 5          | 0.74                      | 0.35 | 0.11  | 0.00086                   | 0.00041  | 0.00013  |
| Limestone      | 0.0032   | 6.14                | 6.5        | 0.74                      | 0.35 | 0.11  | 0.000593                  | 0.000281 | 8.82E-05 |

**Operating Data**

| Raw Materials  | Operating Rates |         |
|----------------|-----------------|---------|
|                | (TPH)           | (TPY)   |
| Coal           | 0               | 0       |
| Petroleum Coke | 400             | 3504000 |
| Limestone      | 0               | 0       |

**Emission Rates - Uncontrolled**

| Raw Materials  | Short-Term    |                 |                  |             |               |                |
|----------------|---------------|-----------------|------------------|-------------|---------------|----------------|
|                | PM<br>(lb/hr) | PM10<br>(lb/hr) | PM2.5<br>(lb/hr) | PM<br>(g/s) | PM10<br>(g/s) | PM2.5<br>(g/s) |
| Coal           | 0             | 0               | 0                | 0           | 0             | 0              |
| Petroleum Coke | 1.71          | 0.81            | 0.25             | 0.216       | 0.102         | 0.032          |
| Limestone      | 0             | 0               | 0                | 0           | 0             | 0              |

5-Transfer Points

**Emission Rates - Controlled 60.00%**

| Raw Materials  | Short-Term    |                 |                  |             |               |                |
|----------------|---------------|-----------------|------------------|-------------|---------------|----------------|
|                | PM<br>(lb/hr) | PM10<br>(lb/hr) | PM2.5<br>(lb/hr) | PM<br>(g/s) | PM10<br>(g/s) | PM2.5<br>(g/s) |
| Coal           | 0             | 0               | 0                | 0           | 0             | 0              |
| Petroleum Coke | 0.685         | 0.324           | 0.102            | 0.086       | 0.041         | 0.013          |
| Limestone      | 0             | 0               | 0                | 0           | 0             | 0              |

**Emission Rates - Uncontrolled**

| Raw Materials  | Long-Term   |               |                |             |               |                |
|----------------|-------------|---------------|----------------|-------------|---------------|----------------|
|                | PM<br>(TPY) | PM10<br>(TPY) | PM2.5<br>(TPY) | PM<br>(g/s) | PM10<br>(g/s) | PM2.5<br>(g/s) |
| Coal           | 0           | 0             | 0              | 0           | 0             | 0              |
| Petroleum Coke | 7.51        | 3.55          | 1.12           | 0.216       | 0.102         | 0.032          |
| Limestone      | 0           | 0             | 0              | 0           | 0             | 0              |

**Emission Rates - Controlled 60.00%**

| Raw Materials  | Long-Term   |               |                |             |               |                |
|----------------|-------------|---------------|----------------|-------------|---------------|----------------|
|                | PM<br>(TPY) | PM10<br>(TPY) | PM2.5<br>(TPY) | PM<br>(g/s) | PM10<br>(g/s) | PM2.5<br>(g/s) |
| Coal           | 0           | 0             | 0              | 0           | 0             | 0              |
| Petroleum Coke | 3.002       | 1.420         | 0.446          | 0.086       | 0.041         | 0.013          |
| Limestone      | 0           | 0             | 0              | 0           | 0             | 0              |

**References:**

Emission Factor - AP42 Chapter 13.2.4 Aggregate Handling and Storage Piles

Belt Speed - JEA Operation Data

Moisture Contents - JEA Operational Data

Transfer Rates - JEA Operational Data

**Foster Wheeler Environmental Corporation**  
**EXCEL 7.0 Worksheet Calculation**

**By:** D. Graziani, P.E.  
**Date:** 11/3/98

**Cal. No.:** 901103DJG01  
**Project No.:** 7830.0020.0056

**Ckd. By:** Kim Evans, P.E.  
**Date:** 11/10/98

**Revision No.:** 1

**Project:** St. Johns River Power Park PSD Permit Update  
**Subject:** Emissions Estimates for the Emergency Reclaim Hoppers

**Emissions Data**

| Raw Materials  | Constant | Wind Speed<br>(MPH) | H2O<br>(%) | Particle Size Multipliers |      |       | Emission Factors (lb/ton) |          |         |
|----------------|----------|---------------------|------------|---------------------------|------|-------|---------------------------|----------|---------|
|                |          |                     |            | PM                        | PM10 | PM2.5 | PM                        | PM10     | PM2.5   |
| Coal           | 0.0032   | 8.00                | 5          | 0.74                      | 0.35 | 0.11  | 0.00121                   | 0.000572 | 0.00018 |
| Petroleum Coke | 0.0032   | 8.00                | 5          | 0.74                      | 0.35 | 0.11  | 0.00121                   | 0.000572 | 0.00018 |
| Limestone      | 0.0032   | 6.80                | 6.5        | 0.74                      | 0.35 | 0.11  | 0.00068                   | 0.00032  | 0.00010 |

**Operating Data**

| Raw Materials  | Operating Rates |         |
|----------------|-----------------|---------|
|                | (TPH)           | (TPY)   |
| Coal           | 2000            | 5126352 |
| Petroleum Coke | 2000            | 5126352 |
| Limestone      | 0               | 0       |

**Emission Rates - Uncontrolled**

| Raw Materials  | Short-Term    |                 |                  |             |               |                |
|----------------|---------------|-----------------|------------------|-------------|---------------|----------------|
|                | PM<br>(lb/hr) | PM10<br>(lb/hr) | PM2.5<br>(lb/hr) | PM<br>(g/s) | PM10<br>(g/s) | PM2.5<br>(g/s) |
| Coal           | 2.42          | 1.14            | 0.36             | 0.305       | 0.144         | 0.045          |
| Petroleum Coke | 2.42          | 1.14            | 0.36             | 0.305       | 0.144         | 0.045          |
| Limestone      | 0             | 0               | 0                | 0           | 0             | 0              |

**Emission Rates - Controlled 75.00%**

| Raw Materials  | Short-Term    |                 |                  |             |               |                |
|----------------|---------------|-----------------|------------------|-------------|---------------|----------------|
|                | PM<br>(lb/hr) | PM10<br>(lb/hr) | PM2.5<br>(lb/hr) | PM<br>(g/s) | PM10<br>(g/s) | PM2.5<br>(g/s) |
| Coal           | 0.605         | 0.286           | 0.090            | 0.076       | 0.036         | 0.011          |
| Petroleum Coke | 0.605         | 0.286           | 0.090            | 0.076       | 0.036         | 0.011          |
| Limestone      | 0             | 0               | 0                | 0           | 0             | 0              |

**Emission Rates - Uncontrolled**

| Raw Materials  | Long-Term   |               |                |             |               |                |
|----------------|-------------|---------------|----------------|-------------|---------------|----------------|
|                | PM<br>(TPY) | PM10<br>(TPY) | PM2.5<br>(TPY) | PM<br>(g/s) | PM10<br>(g/s) | PM2.5<br>(g/s) |
| Coal           | 3.10        | 1.47          | 0.46           | 0.089       | 0.042         | 0.013          |
| Petroleum Coke | 3.10        | 1.47          | 0.46           | 0.089       | 0.042         | 0.013          |
| Limestone      | 0           | 0             | 0              | 0           | 0             | 0              |

**Emission Rates - Controlled 75.00%**

| Raw Materials  | Long-Term   |               |                |             |               |                |
|----------------|-------------|---------------|----------------|-------------|---------------|----------------|
|                | PM<br>(TPY) | PM10<br>(TPY) | PM2.5<br>(TPY) | PM<br>(g/s) | PM10<br>(g/s) | PM2.5<br>(g/s) |
| Coal           | 0.775       | 0.367         | 0.115          | 0.022       | 0.011         | 0.003          |
| Petroleum Coke | 0.775       | 0.367         | 0.115          | 0.022       | 0.011         | 0.003          |
| Limestone      | 0           | 0             | 0              | 0           | 0             | 0              |

**References:**

Emission Factor - AP42 Chapter 13.2.4 Aggregate Handling and Storage Piles  
 Wind Speed - Annual Average  
 Moisture Contents - JEA Operational Data  
 Transfer Rates - JEA Operational Data

**Foster Wheeler Environmental Corporation**  
**EXCEL 7.0 Worksheet Calculation**

**By:** D. Graziani, P.E.  
**Date:** 11/3/98

**Cal. No.:** 901103DJG01  
**Project No.:** 7830.0020.0056

**Ckd. By:** Kim Evans, P.E.  
**Date:** 11/10/98

**Revision No.:** 1

**Project:** St. Johns River Power Park PSD Permit Update  
**Subject:** Emissions Estimates for Limestone Reclaim (2-Transfer Points)

**Emissions Data**

| <i>Raw Materials</i> | <i>Constant</i> | <i>Wind Speed<br/>(MPH)</i> | <i>H2O<br/>(%)</i> | <i>Particle Size Multipliers</i> |             |              | <i>Emission Factors (lb/ton)</i> |             |              |
|----------------------|-----------------|-----------------------------|--------------------|----------------------------------|-------------|--------------|----------------------------------|-------------|--------------|
|                      |                 |                             |                    | <i>PM</i>                        | <i>PM10</i> | <i>PM2.5</i> | <i>PM</i>                        | <i>PM10</i> | <i>PM2.5</i> |
| Limestone            | 0.0032          | 8.00                        | 6.5                | 0.74                             | 0.35        | 0.11         | 0.00084                          | 0.00040     | 0.00012      |

**Operating Data**

| <i>Raw Materials</i> | <i>Operating Rates</i> |              |
|----------------------|------------------------|--------------|
|                      | <i>(TPH)</i>           | <i>(TPY)</i> |
| Limestone            | 300                    | 600000       |

**Emission Rates - Uncontrolled**

| <i>Raw Materials</i> | <i>Short-Term</i>     |                         |                          |                     |                       |                        |
|----------------------|-----------------------|-------------------------|--------------------------|---------------------|-----------------------|------------------------|
|                      | <i>PM<br/>(lb/hr)</i> | <i>PM10<br/>(lb/hr)</i> | <i>PM2.5<br/>(lb/hr)</i> | <i>PM<br/>(g/s)</i> | <i>PM10<br/>(g/s)</i> | <i>PM2.5<br/>(g/s)</i> |
| Limestone            | 0.50                  | 0.24                    | 0.07                     | 0.0634              | 0.0300                | 0.0094                 |

**Emission Rates - Controlled 42.50%**

| <i>Raw Materials</i> | <i>Short-Term</i>     |                         |                          |                     |                       |                        |
|----------------------|-----------------------|-------------------------|--------------------------|---------------------|-----------------------|------------------------|
|                      | <i>PM<br/>(lb/hr)</i> | <i>PM10<br/>(lb/hr)</i> | <i>PM2.5<br/>(lb/hr)</i> | <i>PM<br/>(g/s)</i> | <i>PM10<br/>(g/s)</i> | <i>PM2.5<br/>(g/s)</i> |
| Limestone            | 0.289                 | 0.137                   | 0.043                    | 0.036               | 0.017                 | 0.005                  |

**Emission Rates - Uncontrolled**

| <i>Raw Materials</i> | <i>Long-Term</i>    |                       |                        |                     |                       |                        |
|----------------------|---------------------|-----------------------|------------------------|---------------------|-----------------------|------------------------|
|                      | <i>PM<br/>(TPY)</i> | <i>PM10<br/>(TPY)</i> | <i>PM2.5<br/>(TPY)</i> | <i>PM<br/>(g/s)</i> | <i>PM10<br/>(g/s)</i> | <i>PM2.5<br/>(g/s)</i> |
| Limestone            | 0.50                | 0.24                  | 0.07                   | 0.0145              | 0.0068                | 0.0022                 |

**Emission Rates - Controlled 42.50%**

| <i>Raw Materials</i> | <i>Long-Term</i>    |                       |                        |                     |                       |                        |
|----------------------|---------------------|-----------------------|------------------------|---------------------|-----------------------|------------------------|
|                      | <i>PM<br/>(TPY)</i> | <i>PM10<br/>(TPY)</i> | <i>PM2.5<br/>(TPY)</i> | <i>PM<br/>(g/s)</i> | <i>PM10<br/>(g/s)</i> | <i>PM2.5<br/>(g/s)</i> |
| Limestone            | 0.289               | 0.137                 | 0.043                  | 0.008               | 0.004                 | 0.001                  |

**References:**

Emission Factor - AP42 Chapter 13.2.4 Aggregate Handling and Storage Piles  
Wind Speed - Annual Average  
Moisture Contents - JEA Operational Data  
Transfer Rates - JEA Operational Data

**Foster Wheeler Environmental Corporation**  
**EXCEL 7.0 Worksheet Calculation**

**By:** D. Graziani, P.E.

**Date:** 11/3/98

**Ckd. By:** Kim Evans, P.E.

**Date:** 11/10/98

**Cal. No.:** 901103DJG01

**Project No.:** 7830.0020.0056

**Revision No.:** 1

**Project:** St. Johns River Power Park PSD Permit Update

**Subject:** Emissions Estimates for the Limestone Railcar Dumper

**Emissions Data**

| Raw Materials  | Constant | Wind Speed<br>(MPH) | H2O<br>(%) | Particle Size Multipliers |      |       | Emission Factors (lb/ton) |          |          |
|----------------|----------|---------------------|------------|---------------------------|------|-------|---------------------------|----------|----------|
|                |          |                     |            | PM                        | PM10 | PM2.5 | PM                        | PM10     | PM2.5    |
| Coal           | 0.0032   | 6.80                | 5          | 0.74                      | 0.35 | 0.11  | 0.00098                   | 0.00046  | 0.00015  |
| Petroleum Coke | 0.0032   | 6.80                | 5          | 0.74                      | 0.35 | 0.11  | 0.00098                   | 0.00046  | 0.00015  |
| Limestone      | 0.0032   | 8.00                | 6.5        | 0.74                      | 0.35 | 0.11  | 0.000838                  | 0.000396 | 0.000125 |

**Operating Data**

| Raw Materials  | Operating Rates |        |
|----------------|-----------------|--------|
|                | (TPD)           | (TPY)  |
| Coal           | 0               | 0      |
| Petroleum Coke | 0               | 0      |
| Limestone      | 10000           | 600000 |

**Emission Rates - Uncontrolled**

| Raw Materials  | Short-Term    |                 |                  |             |               |                |
|----------------|---------------|-----------------|------------------|-------------|---------------|----------------|
|                | PM<br>(lb/hr) | PM10<br>(lb/hr) | PM2.5<br>(lb/hr) | PM<br>(g/s) | PM10<br>(g/s) | PM2.5<br>(g/s) |
| Coal           | 0             | 0               | 0                | 0           | 0             | 0              |
| Petroleum Coke | 0             | 0               | 0                | 0           | 0             | 0              |
| Limestone      | 0.35          | 0.17            | 0.05             | 0.044       | 0.021         | 0.007          |

**Emission Rates - Controlled 97.00%**

| Raw Materials  | Short-Term    |                 |                  |             |               |                |
|----------------|---------------|-----------------|------------------|-------------|---------------|----------------|
|                | PM<br>(lb/hr) | PM10<br>(lb/hr) | PM2.5<br>(lb/hr) | PM<br>(g/s) | PM10<br>(g/s) | PM2.5<br>(g/s) |
| Coal           | 0             | 0               | 0                | 0           | 0             | 0              |
| Petroleum Coke | 0             | 0               | 0                | 0           | 0             | 0              |
| Limestone      | 0.010         | 0.005           | 0.002            | 0.001       | 0.001         | 0.000          |

**Emission Rates - Uncontrolled**

| Raw Materials  | Long-Term   |               |                |             |               |                |
|----------------|-------------|---------------|----------------|-------------|---------------|----------------|
|                | PM<br>(TPY) | PM10<br>(TPY) | PM2.5<br>(TPY) | PM<br>(g/s) | PM10<br>(g/s) | PM2.5<br>(g/s) |
| Coal           | 0           | 0             | 0              | 0           | 0             | 0              |
| Petroleum Coke | 0           | 0             | 0              | 0           | 0             | 0              |
| Limestone      | 0.25        | 0.12          | 0.04           | 0.0072      | 0.0034        | 0.0011         |

**Emission Rates - Controlled 97.00%**

| Raw Materials  | Long-Term   |               |                |             |               |                |
|----------------|-------------|---------------|----------------|-------------|---------------|----------------|
|                | PM<br>(TPY) | PM10<br>(TPY) | PM2.5<br>(TPY) | PM<br>(g/s) | PM10<br>(g/s) | PM2.5<br>(g/s) |
| Coal           | 0           | 0             | 0              | 0           | 0             | 0              |
| Petroleum Coke | 0           | 0             | 0              | 0           | 0             | 0              |
| Limestone      | 0.008       | 0.004         | 0.001          | 0.00022     | 0.00010       | 0.00003        |

**References:**

Emission Factor - AP42 Chapter 13.2.4 Aggregate Handling and Storage Piles

Wind Speed - Annual Average

Moisture Contents - JEA Operational Data

Transfer Rates - JEA Operational Data

**Foster Wheeler Environmental Corporation**  
**EXCEL 7.0 Worksheet Calculation**

By: D. Graziani, P.E.

Date: 11/3/98

Ckd. By: Kim Evans, P.E.

Date: 11/10/98

Cal. No.: 901103DJG01

Project No.: 7830.0020.0056

Revision No.: 1

**Project:** St. Johns River Power Park PSD Permit Update

**Subject:** Emissions Estimates for the Limestone Railcar Dumper (4 ~~Transfer Points~~)

**Emissions Data**

| Raw Materials  | Constant | Wind Speed<br>(MPH) | H2O<br>(%) | Particle Size Multipliers |      |       | Emission Factors (lb/ton) |          |          |
|----------------|----------|---------------------|------------|---------------------------|------|-------|---------------------------|----------|----------|
|                |          |                     |            | PM                        | PM10 | PM2.5 | PM                        | PM10     | PM2.5    |
| Coal           | 0.0032   | 6.80                | 5          | 0.74                      | 0.35 | 0.11  | 0.00098                   | 0.00046  | 0.00015  |
| Petroleum Coke | 0.0032   | 6.80                | 5          | 0.74                      | 0.35 | 0.11  | 0.00098                   | 0.00046  | 0.00015  |
| Limestone      | 0.0032   | 8.00                | 6.5        | 0.74                      | 0.35 | 0.11  | 0.000838                  | 0.000396 | 0.000125 |

**Operating Data**

| Raw Materials  | Operating Rates |        |
|----------------|-----------------|--------|
|                | (TPD)           | (TPY)  |
| Coal           | 0               | 0      |
| Petroleum Coke | 0               | 0      |
| Limestone      | 10000           | 600000 |

**Emission Rates - Uncontrolled**

| Raw Materials  | Short-Term |         |         |       |       |       |
|----------------|------------|---------|---------|-------|-------|-------|
|                | PM         | PM10    | PM2.5   | PM    | PM10  | PM2.5 |
|                | (lb/hr)    | (lb/hr) | (lb/hr) | (g/s) | (g/s) | (g/s) |
| Coal           | 0          | 0       | 0       | 0     | 0     | 0     |
| Petroleum Coke | 0          | 0       | 0       | 0     | 0     | 0     |
| Limestone      | 1.40       | 0.66    | 0.21    | 0.176 | 0.083 | 0.026 |

**Emission Rates - Controlled 97.00%**

| Raw Materials  | Short-Term |         |         |       |       |       |
|----------------|------------|---------|---------|-------|-------|-------|
|                | PM         | PM10    | PM2.5   | PM    | PM10  | PM2.5 |
|                | (lb/hr)    | (lb/hr) | (lb/hr) | (g/s) | (g/s) | (g/s) |
| Coal           | 0          | 0       | 0       | 0     | 0     | 0     |
| Petroleum Coke | 0          | 0       | 0       | 0     | 0     | 0     |
| Limestone      | 0.042      | 0.020   | 0.006   | 0.005 | 0.002 | 0.001 |

**Emission Rates - Uncontrolled**

| Raw Materials  | Long-Term |       |       |        |        |        |
|----------------|-----------|-------|-------|--------|--------|--------|
|                | PM        | PM10  | PM2.5 | PM     | PM10   | PM2.5  |
|                | (TPY)     | (TPY) | (TPY) | (g/s)  | (g/s)  | (g/s)  |
| Coal           | 0         | 0     | 0     | 0      | 0      | 0      |
| Petroleum Coke | 0         | 0     | 0     | 0      | 0      | 0      |
| Limestone      | 1.01      | 0.12  | 0.04  | 0.0289 | 0.0034 | 0.0011 |

**Emission Rates - Controlled 97.00%**

| Raw Materials  | Long-Term |       |       |         |         |         |
|----------------|-----------|-------|-------|---------|---------|---------|
|                | PM        | PM10  | PM2.5 | PM      | PM10    | PM2.5   |
|                | (TPY)     | (TPY) | (TPY) | (g/s)   | (g/s)   | (g/s)   |
| Coal           | 0         | 0     | 0     | 0       | 0       | 0       |
| Petroleum Coke | 0         | 0     | 0     | 0       | 0       | 0       |
| Limestone      | 0.030     | 0.004 | 0.001 | 0.00087 | 0.00010 | 0.00003 |

**References:**

Emission Factor - AP42 Chapter 13.2.4 Aggregate Handling and Storage Piles

Wind Speed - Annual Average

Moisture Contents - JEA Operational Data

Transfer Rates - JEA Operational Data

**Foster Wheeler Environmental Corporation**  
**EXCEL 7.0 Worksheet Calculation**

**By:** D. Graziani, P.E.

**Date:** 11/3/98

**Ckd. By:** Kim Evans, P.E.

**Date:** 11/10/98

**Cal. No.:** 901103DJG01

**Project No.:** 7830.0020.0056

**Revision No.:** 1

**Project:** St. Johns River Power Park PSD Permit Update

**Subject:** Emissions Estimates for Limestone Loadout (Truck or Railcar)

**Emissions Data**

| Raw Materials  | Constant | Wind Speed<br>(MPH) | H2O<br>(%) | Particle Size Multipliers |      |       | Emission Factors (lb/ton) |         |         |
|----------------|----------|---------------------|------------|---------------------------|------|-------|---------------------------|---------|---------|
|                |          |                     |            | PM                        | PM10 | PM2.5 | PM                        | PM10    | PM2.5   |
| Coal           | 0.0032   | 7.38                | 5          | 0.74                      | 0.35 | 0.11  | 0.0011                    | 0.0005  | 0.0002  |
| Petroleum Coke | 0.0032   | 7.38                | 5          | 0.74                      | 0.35 | 0.11  | 0.0011                    | 0.0005  | 0.0002  |
| Limestone      | 0.0032   | 8.00                | 6.5        | 0.74                      | 0.35 | 0.11  | 0.00084                   | 0.00040 | 0.00012 |

**Operating Data**

| Raw Materials  | Operating Rates |        |
|----------------|-----------------|--------|
|                | (TPD)           | (TPY)  |
| Coal           | 0               | 0      |
| Petroleum Coke | 0               | 0      |
| Limestone      | 10000           | 600000 |

**Emission Rates - Uncontrolled**

| Raw Materials  | Short-Term    |                 |                  |             |               |                |
|----------------|---------------|-----------------|------------------|-------------|---------------|----------------|
|                | PM<br>(lb/hr) | PM10<br>(lb/hr) | PM2.5<br>(lb/hr) | PM<br>(g/s) | PM10<br>(g/s) | PM2.5<br>(g/s) |
| Coal           | 0             | 0               | 0                | 0           | 0             | 0              |
| Petroleum Coke | 0             | 0               | 0                | 0           | 0             | 0              |
| Limestone      | 0.35          | 0.17            | 0.05             | 0.0440      | 0.0208        | 0.0065         |

**Emission Rates - Controlled 97.00%**

| Raw Materials  | Short-Term    |                 |                  |             |               |                |
|----------------|---------------|-----------------|------------------|-------------|---------------|----------------|
|                | PM<br>(lb/hr) | PM10<br>(lb/hr) | PM2.5<br>(lb/hr) | PM<br>(g/s) | PM10<br>(g/s) | PM2.5<br>(g/s) |
| Coal           | 0             | 0               | 0                | 0           | 0             | 0              |
| Petroleum Coke | 0             | 0               | 0                | 0           | 0             | 0              |
| Limestone      | 0.010         | 0.005           | 0.002            | 0.0013      | 0.0006        | 0.0002         |

**Emission Rates - Uncontrolled**

| Raw Materials  | Long-Term   |               |                |             |               |                |
|----------------|-------------|---------------|----------------|-------------|---------------|----------------|
|                | PM<br>(TPY) | PM10<br>(TPY) | PM2.5<br>(TPY) | PM<br>(g/s) | PM10<br>(g/s) | PM2.5<br>(g/s) |
| Coal           | 0           | 0             | 0              | 0           | 0             | 0              |
| Petroleum Coke | 0           | 0             | 0              | 0           | 0             | 0              |
| Limestone      | 0.25        | 0.12          | 0.04           | 0.0072      | 0.0034        | 0.0011         |

**Emission Rates - Controlled 97.00%**

| Raw Materials  | Long-Term   |               |                |             |               |                |
|----------------|-------------|---------------|----------------|-------------|---------------|----------------|
|                | PM<br>(TPY) | PM10<br>(TPY) | PM2.5<br>(TPY) | PM<br>(g/s) | PM10<br>(g/s) | PM2.5<br>(g/s) |
| Coal           | 0           | 0             | 0              | 0           | 0             | 0              |
| Petroleum Coke | 0           | 0             | 0              | 0           | 0             | 0              |
| Limestone      | 0.0075      | 0.0036        | 0.0011         | 0.00022     | 0.00010       | 0.00003        |

**References:**

Emission Factor - AP42 Chapter 13.2.4 Aggregate Handling and Storage Piles

Wind Speed - Annual Average

Moisture Contents - JEA Operational Data

Transfer Rates - JEA Operational Data

**Foster Wheeler Environmental Corporation**  
**EXCEL 7.0 Worksheet Calculation**

**By:** D. Graziani, P.E.  
**Date:** 11/3/98

**Cal. No.:** 901103DJG01  
**Project No.:** 7830.0020.0056

**Ckd. By:** Kim Evans, P.E.  
**Date:** 11/10/98

**Revision No.:** 1

**Project:** St. Johns River Power Park PSD Permit Update  
**Subject:** Emissions Estimates for Limestone Truck Loadout (3-transfer Points)

**Emissions Data**

| Raw Materials  | Constant | Wind Speed<br>(MPH) | H2O<br>(%) | Particle Size Multipliers |      |       | Emission Factors (lb/ton) |         |         |
|----------------|----------|---------------------|------------|---------------------------|------|-------|---------------------------|---------|---------|
|                |          |                     |            | PM                        | PM10 | PM2.5 | PM                        | PM10    | PM2.5   |
| Coal           | 0.0032   | 7.38                | 5          | 0.74                      | 0.35 | 0.11  | 0.00109                   | 0.00052 | 0.00016 |
| Petroleum Coke | 0.0032   | 7.38                | 5          | 0.74                      | 0.35 | 0.11  | 0.00109                   | 0.00052 | 0.00016 |
| Limestone      | 0.0032   | 8.00                | 6.5        | 0.74                      | 0.35 | 0.11  | 0.00084                   | 0.00040 | 0.00012 |

**Operating Data**

| Raw Materials  | Operating Rates |        |
|----------------|-----------------|--------|
|                | (TPD)           | (TPY)  |
| Coal           | 0               | 0      |
| Petroleum Coke | 0               | 0      |
| Limestone      | 8000            | 600000 |

**Emission Rates - Uncontrolled**

| Raw Materials  | Short-Term    |                 |                  |             |               |                |
|----------------|---------------|-----------------|------------------|-------------|---------------|----------------|
|                | PM<br>(lb/hr) | PM10<br>(lb/hr) | PM2.5<br>(lb/hr) | PM<br>(g/s) | PM10<br>(g/s) | PM2.5<br>(g/s) |
| Coal           | 0             | 0               | 0                | 0           | 0             | 0              |
| Petroleum Coke | 0             | 0               | 0                | 0           | 0             | 0              |
| Limestone      | 0.84          | 0.40            | 0.12             | 0.106       | 0.050         | 0.016          |

**Emission Rates - Controlled 75.00%**

| Raw Materials  | Short-Term    |                 |                  |             |               |                |
|----------------|---------------|-----------------|------------------|-------------|---------------|----------------|
|                | PM<br>(lb/hr) | PM10<br>(lb/hr) | PM2.5<br>(lb/hr) | PM<br>(g/s) | PM10<br>(g/s) | PM2.5<br>(g/s) |
| Coal           | 0             | 0               | 0                | 0           | 0             | 0              |
| Petroleum Coke | 0             | 0               | 0                | 0           | 0             | 0              |
| Limestone      | 0.209         | 0.099           | 0.031            | 0.026       | 0.012         | 0.004          |

**Emission Rates - Uncontrolled**

| Raw Materials  | Long-Term   |               |                |             |               |                |
|----------------|-------------|---------------|----------------|-------------|---------------|----------------|
|                | PM<br>(TPY) | PM10<br>(TPY) | PM2.5<br>(TPY) | PM<br>(g/s) | PM10<br>(g/s) | PM2.5<br>(g/s) |
| Coal           | 0           | 0             | 0              | 0           | 0             | 0              |
| Petroleum Coke | 0           | 0             | 0              | 0           | 0             | 0              |
| Limestone      | 0.75        | 0.36          | 0.11           | 0.0217      | 0.0103        | 0.0032         |

**Emission Rates - Controlled 75.00%**

| Raw Materials  | Long-Term   |               |                |             |               |                |
|----------------|-------------|---------------|----------------|-------------|---------------|----------------|
|                | PM<br>(TPY) | PM10<br>(TPY) | PM2.5<br>(TPY) | PM<br>(g/s) | PM10<br>(g/s) | PM2.5<br>(g/s) |
| Coal           | 0           | 0             | 0              | 0           | 0             | 0              |
| Petroleum Coke | 0           | 0             | 0              | 0           | 0             | 0              |
| Limestone      | 0.188       | 0.089         | 0.028          | 0.005       | 0.003         | 0.001          |

**References:**

Emission Factor - AP42 Chapter 13.2.4 Aggregate Handling and Storage Piles  
Wind Speed - Annual Average  
Moisture Contents - JEA Operational Data  
Transfer Rates - JEA Operational Data

**FOSTER WHEELER ENVIRONMENTAL CORPORATION  
CALCULATION SHEET - EXCEL 5.0**

**By: E. Deken, PE**  
**Date: 10/23/98**  
**Ch'd By: Darrel J. Graziani, P.E.**  
**Date: 11/07/98**

**Cal. No.: 981023ED01**  
**Rev. No.: SJRPP 1**  
**OFS: 7830.0020.0054**

**Project: JEA St. Johns Power Park**

**Subject: Fugitive Emission Estimates - Wind Erosion Railcar Limestone Storage Pile**

**Assumptions:**

1. The threshold friction velocity was selected based on data available in AP-42, Section 13.2.5.
2. Roughness height was estimated based on largest values listed in AP-42, Section 13.2.5
3. Pile is always at maximum capacity which is maximizing emissions.

**References:**

1. AP-42, Section 13.2.5, Industrial Wind Erosion
2. 1997 Local Climatological Data, NOAA, National Climatic Data Center

**Erosion Potential Calculations**

Threshold Friction Velocity: **1**  
 Roughness Height (m): **0.005**

| Number of Disturbances | Fastest Mile Values   |          |          |          | Equivalent Friction Velocities<br>u*=0.1u* |                                     |                                     | Rain Fall (inches) | Erosion Potential                            |                                              |                                              | Emissions (lb) |
|------------------------|-----------------------|----------|----------|----------|--------------------------------------------|-------------------------------------|-------------------------------------|--------------------|----------------------------------------------|----------------------------------------------|----------------------------------------------|----------------|
|                        | Anemometer Height (m) |          |          |          |                                            |                                     |                                     |                    | (g/m^2)                                      |                                              |                                              |                |
|                        | 6.1 (mph)             | 10 (m/s) | 10 (mph) | 10 (m/s) | u <sub>a</sub> /u <sub>t</sub> :0.2        | u <sub>a</sub> /u <sub>t</sub> :0.6 | u <sub>a</sub> /u <sub>t</sub> :0.9 |                    | 36% Pile u <sub>a</sub> /u <sub>t</sub> :0.2 | 50% Pile u <sub>a</sub> /u <sub>t</sub> :0.6 | 14% Pile u <sub>a</sub> /u <sub>t</sub> :0.9 |                |
| 01-Jan                 | 15                    | 6.706    | 16.043   | 7.172    | 0.143                                      | 0.430                               | 0.645                               | 0.000              | 0.000                                        | 0.000                                        | 0.000                                        | 0.00           |
| 02-Jan                 | 14                    | 6.259    | 14.974   | 6.694    | 0.134                                      | 0.402                               | 0.602                               | 0.000              | 0.000                                        | 0.000                                        | 0.000                                        | 0.00           |
| 03-Jan                 | 16                    | 7.153    | 17.113   | 7.650    | 0.153                                      | 0.459                               | 0.689                               | 0.000              | 0.000                                        | 0.000                                        | 0.000                                        | 0.00           |
| 04-Jan                 | 15                    | 6.706    | 16.043   | 7.172    | 0.143                                      | 0.430                               | 0.645                               | 0.000              | 0.000                                        | 0.000                                        | 0.000                                        | 0.00           |
| 05-Jan                 | 22                    | 9.835    | 23.530   | 10.519   | 0.210                                      | 0.631                               | 0.947                               | 0.120              | 0.000                                        | 0.000                                        | 0.000                                        | 0.00           |
| 06-Jan                 | 9                     | 4.023    | 9.626    | 4.303    | 0.086                                      | 0.258                               | 0.387                               | 0.280              | 0.000                                        | 0.000                                        | 0.000                                        | 0.00           |
| 07-Jan                 | 14                    | 6.259    | 14.974   | 6.694    | 0.134                                      | 0.402                               | 0.602                               | 0.030              | 0.000                                        | 0.000                                        | 0.000                                        | 0.00           |
| 08-Jan                 | 17                    | 7.600    | 18.182   | 8.128    | 0.163                                      | 0.488                               | 0.732                               | 0.040              | 0.000                                        | 0.000                                        | 0.000                                        | 0.00           |
| 09-Jan                 | 20                    | 8.941    | 21.391   | 9.563    | 0.191                                      | 0.574                               | 0.861                               | 0.600              | 0.000                                        | 0.000                                        | 0.000                                        | 0.00           |
| 10-Jan                 | 26                    | 11.623   | 27.808   | 12.431   | 0.249                                      | 0.746                               | 1.119                               | 0.000              | 0.000                                        | 0.000                                        | 3.790                                        | 30.74          |
| 11-Jan                 | 14                    | 6.259    | 14.974   | 6.694    | 0.134                                      | 0.402                               | 0.602                               | 0.000              | 0.000                                        | 0.000                                        | 0.000                                        | 0.00           |
| 12-Jan                 | 10                    | 4.470    | 10.696   | 4.781    | 0.096                                      | 0.287                               | 0.430                               | 0.000              | 0.000                                        | 0.000                                        | 0.000                                        | 0.00           |
| 13-Jan                 | 15                    | 6.706    | 16.043   | 7.172    | 0.143                                      | 0.430                               | 0.645                               | 0.000              | 0.000                                        | 0.000                                        | 0.000                                        | 0.00           |
| 14-Jan                 | 20                    | 8.941    | 21.391   | 9.563    | 0.191                                      | 0.574                               | 0.861                               | 0.000              | 0.000                                        | 0.000                                        | 0.000                                        | 0.00           |
| 15-Jan                 | 16                    | 7.153    | 17.113   | 7.650    | 0.153                                      | 0.459                               | 0.689                               | 0.005              | 0.000                                        | 0.000                                        | 0.000                                        | 0.00           |
| 16-Jan                 | 23                    | 10.282   | 24.600   | 10.997   | 0.220                                      | 0.660                               | 0.990                               | 0.330              | 0.000                                        | 0.000                                        | 0.000                                        | 0.00           |
| 17-Jan                 | 24                    | 10.729   | 25.669   | 11.475   | 0.230                                      | 0.689                               | 1.033                               | 0.000              | 0.000                                        | 0.000                                        | 0.881                                        | 7.15           |
| 18-Jan                 | 21                    | 9.388    | 22.461   | 10.041   | 0.201                                      | 0.602                               | 0.904                               | 0.000              | 0.000                                        | 0.000                                        | 0.000                                        | 0.00           |
| 19-Jan                 | 17                    | 7.600    | 18.182   | 8.128    | 0.163                                      | 0.488                               | 0.732                               | 0.000              | 0.000                                        | 0.000                                        | 0.000                                        | 0.00           |
| 20-Jan                 | 15                    | 6.706    | 16.043   | 7.172    | 0.143                                      | 0.430                               | 0.645                               | 0.000              | 0.000                                        | 0.000                                        | 0.000                                        | 0.00           |
| 21-Jan                 | 16                    | 7.153    | 17.113   | 7.650    | 0.153                                      | 0.459                               | 0.689                               | 0.000              | 0.000                                        | 0.000                                        | 0.000                                        | 0.00           |
| 22-Jan                 | 22                    | 9.835    | 23.530   | 10.519   | 0.210                                      | 0.631                               | 0.947                               | 0.000              | 0.000                                        | 0.000                                        | 0.000                                        | 0.00           |
| 23-Jan                 | 15                    | 6.706    | 16.043   | 7.172    | 0.143                                      | 0.430                               | 0.645                               | 0.005              | 0.000                                        | 0.000                                        | 0.000                                        | 0.00           |
| 24-Jan                 | 18                    | 8.047    | 19.252   | 8.606    | 0.172                                      | 0.516                               | 0.775                               | 0.000              | 0.000                                        | 0.000                                        | 0.000                                        | 0.00           |
| 25-Jan                 | 18                    | 8.047    | 19.252   | 8.606    | 0.172                                      | 0.516                               | 0.775                               | 1.200              | 0.000                                        | 0.000                                        | 0.000                                        | 0.00           |
| 26-Jan                 | 17                    | 7.600    | 18.182   | 8.128    | 0.163                                      | 0.488                               | 0.732                               | 0.000              | 0.000                                        | 0.000                                        | 0.000                                        | 0.00           |
| 27-Jan                 | 18                    | 8.047    | 19.252   | 8.606    | 0.172                                      | 0.516                               | 0.775                               | 0.000              | 0.000                                        | 0.000                                        | 0.000                                        | 0.00           |
| 28-Jan                 | 17                    | 7.600    | 18.182   | 8.128    | 0.163                                      | 0.488                               | 0.732                               | 0.000              | 0.000                                        | 0.000                                        | 0.000                                        | 0.00           |
| 29-Jan                 | 22                    | 9.835    | 23.530   | 10.519   | 0.210                                      | 0.631                               | 0.947                               | 0.000              | 0.000                                        | 0.000                                        | 0.000                                        | 0.00           |
| 30-Jan                 | 15                    | 6.706    | 16.043   | 7.172    | 0.143                                      | 0.430                               | 0.645                               | 0.310              | 0.000                                        | 0.000                                        | 0.000                                        | 0.00           |
| 31-Jan                 | 15                    | 6.706    | 16.043   | 7.172    | 0.143                                      | 0.430                               | 0.645                               | 0.000              | 0.000                                        | 0.000                                        | 0.000                                        | 0.00           |
| 01-Feb                 | 21                    | 9.388    | 22.461   | 10.041   | 0.201                                      | 0.602                               | 0.904                               | 0.000              | 0.000                                        | 0.000                                        | 0.000                                        | 0.00           |
| 02-Feb                 | 10                    | 4.470    | 10.696   | 4.781    | 0.096                                      | 0.287                               | 0.430                               | 0.000              | 0.000                                        | 0.000                                        | 0.000                                        | 0.00           |
| 03-Feb                 | 13                    | 5.812    | 13.904   | 6.216    | 0.124                                      | 0.373                               | 0.559                               | 0.000              | 0.000                                        | 0.000                                        | 0.000                                        | 0.00           |
| 04-Feb                 | 15                    | 6.706    | 16.043   | 7.172    | 0.143                                      | 0.430                               | 0.645                               | 0.000              | 0.000                                        | 0.000                                        | 0.000                                        | 0.00           |
| 05-Feb                 | 17                    | 7.600    | 18.182   | 8.128    | 0.163                                      | 0.488                               | 0.732                               | 0.000              | 0.000                                        | 0.000                                        | 0.000                                        | 0.00           |
| 06-Feb                 | 14                    | 6.259    | 14.974   | 6.694    | 0.134                                      | 0.402                               | 0.602                               | 0.000              | 0.000                                        | 0.000                                        | 0.000                                        | 0.00           |
| 07-Feb                 | 11                    | 4.917    | 11.765   | 5.259    | 0.105                                      | 0.316                               | 0.473                               | 0.000              | 0.000                                        | 0.000                                        | 0.000                                        | 0.00           |
| 08-Feb                 | 21                    | 9.388    | 22.461   | 10.041   | 0.201                                      | 0.602                               | 0.904                               | 0.030              | 0.000                                        | 0.000                                        | 0.000                                        | 0.00           |
| 09-Feb                 | 16                    | 7.153    | 17.113   | 7.650    | 0.153                                      | 0.459                               | 0.689                               | 0.005              | 0.000                                        | 0.000                                        | 0.000                                        | 0.00           |
| 10-Feb                 | 11                    | 4.917    | 11.765   | 5.259    | 0.105                                      | 0.316                               | 0.473                               | 0.005              | 0.000                                        | 0.000                                        | 0.000                                        | 0.00           |
| 11-Feb                 | 10                    | 4.470    | 10.696   | 4.781    | 0.096                                      | 0.287                               | 0.430                               | 0.000              | 0.000                                        | 0.000                                        | 0.000                                        | 0.00           |
| 12-Feb                 | 14                    | 6.259    | 14.974   | 6.694    | 0.134                                      | 0.402                               | 0.602                               | 0.000              | 0.000                                        | 0.000                                        | 0.000                                        | 0.00           |
| 13-Feb                 | 18                    | 8.047    | 19.252   | 8.606    | 0.172                                      | 0.516                               | 0.775                               | 0.130              | 0.000                                        | 0.000                                        | 0.000                                        | 0.00           |
| 14-Feb                 | 18                    | 8.047    | 19.252   | 8.606    | 0.172                                      | 0.516                               | 0.775                               | 0.040              | 0.000                                        | 0.000                                        | 0.000                                        | 0.00           |
| 15-Feb                 | 18                    | 8.047    | 19.252   | 8.606    | 0.172                                      | 0.516                               | 0.775                               | 0.400              | 0.000                                        | 0.000                                        | 0.000                                        | 0.00           |
| 16-Feb                 | 15                    | 6.706    | 16.043   | 7.172    | 0.143                                      | 0.430                               | 0.645                               | 0.000              | 0.000                                        | 0.000                                        | 0.000                                        | 0.00           |
| 17-Feb                 | 20                    | 8.941    | 21.391   | 9.563    | 0.191                                      | 0.574                               | 0.861                               | 0.000              | 0.000                                        | 0.000                                        | 0.000                                        | 0.00           |
| 18-Feb                 | 16                    | 7.153    | 17.113   | 7.650    | 0.153                                      | 0.459                               | 0.689                               | 0.000              | 0.000                                        | 0.000                                        | 0.000                                        | 0.00           |
| 19-Feb                 | 14                    | 6.259    | 14.974   | 6.694    | 0.134                                      | 0.402                               | 0.602                               | 0.005              | 0.000                                        | 0.000                                        | 0.000                                        | 0.00           |
| 20-Feb                 | 20                    | 8.941    | 21.391   | 9.563    | 0.191                                      | 0.574                               | 0.861                               | 0.000              | 0.000                                        | 0.000                                        | 0.000                                        | 0.00           |
| 21-Feb                 | 24                    | 10.729   | 25.669   | 11.475   | 0.230                                      | 0.689                               | 1.033                               | 0.000              | 0.000                                        | 0.000                                        | 0.881                                        | 7.15           |
| 22-Feb                 | 17                    | 7.600    | 18.182   | 8.128    | 0.163                                      | 0.488                               | 0.732                               | 0.310              | 0.000                                        | 0.000                                        | 0.000                                        | 0.00           |
| 23-Feb                 | 18                    | 8.047    | 19.252   | 8.606    | 0.172                                      | 0.516                               | 0.775                               | 0.005              | 0.000                                        | 0.000                                        | 0.000                                        | 0.00           |
| 24-Feb                 | 18                    | 8.047    | 19.252   | 8.606    | 0.172                                      | 0.516                               | 0.775                               | 0.140              | 0.000                                        | 0.000                                        | 0.000                                        | 0.00           |



**FOSTER WHEELER ENVIRONMENTAL CORPORATION**  
**CALCULATION SHEET - EXCEL 5.0**

**By:** E. Deken, PE  
**Date:** 10/23/98  
**Ch'd By:** Darrel J. Graziani, P.E.  
**Date:** 11/07/98

**Cal. No.:** 981023ED01  
**Rev. No.:** SJRPP 1  
**OFS:** 7830.0020.0054

**Project:** JEA St. Johns Power Park

**Subject:** Fugitive Emission Estimates - Wind Erosion Railcar Limestone Storage Pile

**Assumptions:**

1. The threshold friction velocity was selected based on data available in AP-42, Section 13.2.5.
2. Roughness height was estimated based on largest values listed in AP-42, Section 13.2.5
3. Pile is always at maximum capacity which is maximizing emissions.

**References:**

1. AP-42, Section 13.2.5, Industrial Wind Erosion
2. 1997 Local Climatological Data, NOAA, National Climatic Data Center

**Erosion Potential Calculations**

Threshold Friction Velocity: **1**  
 Roughness Height (m): **0.005**

| Number<br>of<br>Disturbances | Fastest Mile Values<br>Anemometer Height (m) |        |        |        | Equivalent Friction Velocities<br>u*=0.1u* |                                     |                                     | Rain Fall<br>(Inches) | Erosion Potential                               |                                                 |                                                 | Emissions<br>(lb) |
|------------------------------|----------------------------------------------|--------|--------|--------|--------------------------------------------|-------------------------------------|-------------------------------------|-----------------------|-------------------------------------------------|-------------------------------------------------|-------------------------------------------------|-------------------|
|                              | 6.1                                          |        | 10     |        | (m/s)                                      |                                     |                                     |                       | (g/m^2)                                         |                                                 |                                                 |                   |
|                              | (mph)                                        | (m/s)  | (mph)  | (m/s)  | u <sub>a</sub> /u <sub>t</sub> :0.2        | u <sub>a</sub> /u <sub>t</sub> :0.6 | u <sub>a</sub> /u <sub>t</sub> :0.9 |                       | 36% Pile<br>u <sub>a</sub> /u <sub>t</sub> :0.2 | 50% Pile<br>u <sub>a</sub> /u <sub>t</sub> :0.6 | 14% Pile<br>u <sub>a</sub> /u <sub>t</sub> :0.9 |                   |
| 25-Feb                       | 21                                           | 9.388  | 22.461 | 10.041 | 0.201                                      | 0.602                               | 0.904                               | 0.230                 | 0.000                                           | 0.000                                           | 0.000                                           | 0.00              |
| 26-Feb                       | 15                                           | 6.706  | 16.043 | 7.172  | 0.143                                      | 0.430                               | 0.645                               | 0.000                 | 0.000                                           | 0.000                                           | 0.000                                           | 0.00              |
| 27-Feb                       | 20                                           | 8.941  | 21.391 | 9.563  | 0.191                                      | 0.574                               | 0.861                               | 0.000                 | 0.000                                           | 0.000                                           | 0.000                                           | 0.00              |
| 28-Feb                       | 20                                           | 8.941  | 21.391 | 9.563  | 0.191                                      | 0.574                               | 0.861                               | 0.000                 | 0.000                                           | 0.000                                           | 0.000                                           | 0.00              |
| 01-Mar                       | 20                                           | 8.941  | 21.391 | 9.563  | 0.191                                      | 0.574                               | 0.861                               | 0.000                 | 0.000                                           | 0.000                                           | 0.000                                           | 0.00              |
| 02-Mar                       | 15                                           | 6.706  | 16.043 | 7.172  | 0.143                                      | 0.430                               | 0.645                               | 0.000                 | 0.000                                           | 0.000                                           | 0.000                                           | 0.00              |
| 03-Mar                       | 22                                           | 9.835  | 23.530 | 10.519 | 0.210                                      | 0.631                               | 0.947                               | 0.000                 | 0.000                                           | 0.000                                           | 0.000                                           | 0.00              |
| 04-Mar                       | 17                                           | 7.600  | 18.182 | 8.128  | 0.163                                      | 0.488                               | 0.732                               | 0.000                 | 0.000                                           | 0.000                                           | 0.000                                           | 0.00              |
| 05-Mar                       | 11                                           | 4.917  | 11.765 | 5.259  | 0.105                                      | 0.316                               | 0.473                               | 0.000                 | 0.000                                           | 0.000                                           | 0.000                                           | 0.00              |
| 06-Mar                       | 24                                           | 10.729 | 25.669 | 11.475 | 0.230                                      | 0.689                               | 1.033                               | 0.005                 | 0.000                                           | 0.000                                           | 0.881                                           | 7.15              |
| 07-Mar                       | 18                                           | 8.047  | 19.252 | 8.606  | 0.172                                      | 0.516                               | 0.775                               | 0.000                 | 0.000                                           | 0.000                                           | 0.000                                           | 0.00              |
| 08-Mar                       | 14                                           | 6.259  | 14.974 | 6.694  | 0.134                                      | 0.402                               | 0.602                               | 0.000                 | 0.000                                           | 0.000                                           | 0.000                                           | 0.00              |
| 09-Mar                       | 20                                           | 8.941  | 21.391 | 9.563  | 0.191                                      | 0.574                               | 0.861                               | 0.000                 | 0.000                                           | 0.000                                           | 0.000                                           | 0.00              |
| 10-Mar                       | 16                                           | 7.153  | 17.113 | 7.650  | 0.153                                      | 0.459                               | 0.689                               | 0.000                 | 0.000                                           | 0.000                                           | 0.000                                           | 0.00              |
| 11-Mar                       | 17                                           | 7.600  | 18.182 | 8.128  | 0.163                                      | 0.488                               | 0.732                               | 0.005                 | 0.000                                           | 0.000                                           | 0.000                                           | 0.00              |
| 12-Mar                       | 20                                           | 8.941  | 21.391 | 9.563  | 0.191                                      | 0.574                               | 0.861                               | 0.000                 | 0.000                                           | 0.000                                           | 0.000                                           | 0.00              |
| 13-Mar                       | 29                                           | 12.964 | 31.017 | 13.866 | 0.277                                      | 0.832                               | 1.248                               | 0.170                 | 0.000                                           | 0.000                                           | 0.000                                           | 0.00              |
| 14-Mar                       | 18                                           | 8.047  | 19.252 | 8.606  | 0.172                                      | 0.516                               | 0.775                               | 0.390                 | 0.000                                           | 0.000                                           | 0.000                                           | 0.00              |
| 15-Mar                       | 15                                           | 6.706  | 16.043 | 7.172  | 0.143                                      | 0.430                               | 0.645                               | 0.000                 | 0.000                                           | 0.000                                           | 0.000                                           | 0.00              |
| 16-Mar                       | 20                                           | 8.941  | 21.391 | 9.563  | 0.191                                      | 0.574                               | 0.861                               | 0.000                 | 0.000                                           | 0.000                                           | 0.000                                           | 0.00              |
| 17-Mar                       | 18                                           | 8.047  | 19.252 | 8.606  | 0.172                                      | 0.516                               | 0.775                               | 0.000                 | 0.000                                           | 0.000                                           | 0.000                                           | 0.00              |
| 18-Mar                       | 15                                           | 6.706  | 16.043 | 7.172  | 0.143                                      | 0.430                               | 0.645                               | 0.005                 | 0.000                                           | 0.000                                           | 0.000                                           | 0.00              |
| 19-Mar                       | 18                                           | 8.047  | 19.252 | 8.606  | 0.172                                      | 0.516                               | 0.775                               | 0.000                 | 0.000                                           | 0.000                                           | 0.000                                           | 0.00              |
| 20-Mar                       | 13                                           | 5.812  | 13.904 | 6.216  | 0.124                                      | 0.373                               | 0.559                               | 0.030                 | 0.000                                           | 0.000                                           | 0.000                                           | 0.00              |
| 21-Mar                       | 14                                           | 6.259  | 14.974 | 6.694  | 0.134                                      | 0.402                               | 0.602                               | 0.470                 | 0.000                                           | 0.000                                           | 0.000                                           | 0.00              |
| 22-Mar                       | 21                                           | 9.388  | 22.461 | 10.041 | 0.201                                      | 0.602                               | 0.904                               | 0.000                 | 0.000                                           | 0.000                                           | 0.000                                           | 0.00              |
| 23-Mar                       | 17                                           | 7.600  | 18.182 | 8.128  | 0.163                                      | 0.488                               | 0.732                               | 0.000                 | 0.000                                           | 0.000                                           | 0.000                                           | 0.00              |
| 24-Mar                       | 25                                           | 11.176 | 26.739 | 11.953 | 0.239                                      | 0.717                               | 1.076                               | 0.005                 | 0.000                                           | 0.000                                           | 2.228                                           | 18.07             |
| 25-Mar                       | 24                                           | 10.729 | 25.669 | 11.475 | 0.230                                      | 0.689                               | 1.033                               | 0.490                 | 0.000                                           | 0.000                                           | 0.000                                           | 0.00              |
| 26-Mar                       | 17                                           | 7.600  | 18.182 | 8.128  | 0.163                                      | 0.488                               | 0.732                               | 0.020                 | 0.000                                           | 0.000                                           | 0.000                                           | 0.00              |
| 27-Mar                       | 13                                           | 5.812  | 13.904 | 6.216  | 0.124                                      | 0.373                               | 0.559                               | 0.000                 | 0.000                                           | 0.000                                           | 0.000                                           | 0.00              |
| 28-Mar                       | 17                                           | 7.600  | 18.182 | 8.128  | 0.163                                      | 0.488                               | 0.732                               | 0.000                 | 0.000                                           | 0.000                                           | 0.000                                           | 0.00              |
| 29-Mar                       | 22                                           | 9.835  | 23.530 | 10.519 | 0.210                                      | 0.631                               | 0.947                               | 0.005                 | 0.000                                           | 0.000                                           | 0.000                                           | 0.00              |
| 30-Mar                       | 30                                           | 13.411 | 32.087 | 14.344 | 0.287                                      | 0.861                               | 1.291                               | 0.270                 | 0.000                                           | 0.000                                           | 0.000                                           | 0.00              |
| 31-Mar                       | 25                                           | 11.176 | 26.739 | 11.953 | 0.239                                      | 0.717                               | 1.076                               | 0.005                 | 0.000                                           | 0.000                                           | 2.228                                           | 18.07             |
| 01-Apr                       | 15                                           | 6.706  | 16.043 | 7.172  | 0.143                                      | 0.430                               | 0.645                               | 0.000                 | 0.000                                           | 0.000                                           | 0.000                                           | 0.00              |
| 02-Apr                       | 21                                           | 9.388  | 22.461 | 10.041 | 0.201                                      | 0.602                               | 0.904                               | 0.000                 | 0.000                                           | 0.000                                           | 0.000                                           | 0.00              |
| 03-Apr                       | 16                                           | 7.153  | 17.113 | 7.650  | 0.153                                      | 0.459                               | 0.689                               | 0.000                 | 0.000                                           | 0.000                                           | 0.000                                           | 0.00              |
| 04-Apr                       | 16                                           | 7.153  | 17.113 | 7.650  | 0.153                                      | 0.459                               | 0.689                               | 0.000                 | 0.000                                           | 0.000                                           | 0.000                                           | 0.00              |
| 05-Apr                       | 21                                           | 9.388  | 22.461 | 10.041 | 0.201                                      | 0.602                               | 0.904                               | 0.000                 | 0.000                                           | 0.000                                           | 0.000                                           | 0.00              |
| 06-Apr                       | 17                                           | 7.600  | 18.182 | 8.128  | 0.163                                      | 0.488                               | 0.732                               | 0.005                 | 0.000                                           | 0.000                                           | 0.000                                           | 0.00              |
| 07-Apr                       | 18                                           | 8.047  | 19.252 | 8.606  | 0.172                                      | 0.516                               | 0.775                               | 0.000                 | 0.000                                           | 0.000                                           | 0.000                                           | 0.00              |
| 08-Apr                       | 21                                           | 9.388  | 22.461 | 10.041 | 0.201                                      | 0.602                               | 0.904                               | 0.000                 | 0.000                                           | 0.000                                           | 0.000                                           | 0.00              |
| 09-Apr                       | 15                                           | 6.706  | 16.043 | 7.172  | 0.143                                      | 0.430                               | 0.645                               | 0.000                 | 0.000                                           | 0.000                                           | 0.000                                           | 0.00              |
| 10-Apr                       | 21                                           | 9.388  | 22.461 | 10.041 | 0.201                                      | 0.602                               | 0.904                               | 0.000                 | 0.000                                           | 0.000                                           | 0.000                                           | 0.00              |
| 11-Apr                       | 21                                           | 9.388  | 22.461 | 10.041 | 0.201                                      | 0.602                               | 0.904                               | 0.005                 | 0.000                                           | 0.000                                           | 0.000                                           | 0.00              |
| 12-Apr                       | 22                                           | 9.835  | 23.530 | 10.519 | 0.210                                      | 0.631                               | 0.947                               | 0.050                 | 0.000                                           | 0.000                                           | 0.000                                           | 0.00              |
| 13-Apr                       | 16                                           | 7.153  | 17.113 | 7.650  | 0.153                                      | 0.459                               | 0.689                               | 0.000                 | 0.000                                           | 0.000                                           | 0.000                                           | 0.00              |
| 14-Apr                       | 14                                           | 6.259  | 14.974 | 6.694  | 0.134                                      | 0.402                               | 0.602                               | 0.550                 | 0.000                                           | 0.000                                           | 0.000                                           | 0.00              |
| 15-Apr                       | 20                                           | 8.941  | 21.391 | 9.563  | 0.191                                      | 0.574                               | 0.861                               | 0.160                 | 0.000                                           | 0.000                                           | 0.000                                           | 0.00              |
| 16-Apr                       | 16                                           | 7.153  | 17.113 | 7.650  | 0.153                                      | 0.459                               | 0.689                               | 0.000                 | 0.000                                           | 0.000                                           | 0.000                                           | 0.00              |
| 17-Apr                       | 24                                           | 10.729 | 25.669 | 11.475 | 0.230                                      | 0.689                               | 1.033                               | 0.000                 | 0.000                                           | 0.000                                           | 0.881                                           | 7.15              |
| 18-Apr                       | 20                                           | 8.941  | 21.391 | 9.563  | 0.191                                      | 0.574                               | 0.861                               | 0.000                 | 0.000                                           | 0.000                                           | 0.000                                           | 0.00              |
| 19-Apr                       | 20                                           | 8.941  | 21.391 | 9.563  | 0.191                                      | 0.574                               | 0.861                               | 0.000                 | 0.000                                           | 0.000                                           | 0.000                                           | 0.00              |
| 20-Apr                       | 18                                           | 8.047  | 19.252 | 8.606  | 0.172                                      | 0.516                               | 0.775                               | 0.000                 | 0.000                                           | 0.000                                           | 0.000                                           | 0.00              |

**FOSTER WHEELER ENVIRONMENTAL CORPORATION**  
**CALCULATION SHEET - EXCEL 5.0**

**By:** E. Deken, PE  
**Date:** 10/23/98  
**Ch'd By:** Darrel J. Graziani, P.E.  
**Date:** 11/07/98

**Cal. No.:** 981023ED01  
**Rev. No.:** SJRPP 1  
**OFS:** 7830.0020.0054

**Project:** JEA St. Johns Power Park

**Subject:** Fugitive Emission Estimates - Wind Erosion Railcar Limestone Storage Pile

**Assumptions:**

1. The threshold friction velocity was selected based on data available in AP-42, Section 13.2.5.
2. Roughness height was estimated based on largest values listed in AP-42, Section 13.2.5
3. Pile is always at maximum capacity which is maximizing emissions.

**References:**

1. AP-42, Section 13.2.5, Industrial Wind Erosion
2. 1997 Local Climatological Data, NOAA, National Climatic Data Center

**Erosion Potential Calculations**

Threshold Friction Velocity: 1  
 Roughness Height (m) 0.005

| Number<br>of<br>Disturbances | Fastest Mile Values<br>Anemometer Height (m) |        |        |        | Equivalent Friction Velocities<br>u*~0.1u* |             |             | Rain Fall<br>(Inches) | Erosion Potential<br>(g/m^2) |             |             | Emissions<br>(lb) |
|------------------------------|----------------------------------------------|--------|--------|--------|--------------------------------------------|-------------|-------------|-----------------------|------------------------------|-------------|-------------|-------------------|
|                              | 6.1                                          |        | 10     |        | (m/s)                                      |             |             |                       | 36% Pile                     | 50% Pile    | 14% Pile    |                   |
|                              | (mph)                                        | (m/s)  | (mph)  | (m/s)  | u_a/u_t:0.2                                | u_a/u_t:0.6 | u_a/u_t:0.9 |                       | u_a/u_t:0.2                  | u_a/u_t:0.6 | u_a/u_t:0.9 |                   |
| 21-Apr                       | 20                                           | 8.941  | 21.391 | 9.563  | 0.191                                      | 0.574       | 0.861       | 0.000                 | 0.000                        | 0.000       | 0.000       | 0.00              |
| 22-Apr                       | 23                                           | 10.282 | 24.600 | 10.997 | 0.220                                      | 0.660       | 0.990       | 0.010                 | 0.000                        | 0.000       | 0.000       | 0.00              |
| 23-Apr                       | 43                                           | 19.223 | 45.991 | 20.560 | 0.411                                      | 1.234       | 1.850       | 1.150                 | 0.000                        | 0.000       | 0.000       | 0.00              |
| 24-Apr                       | 17                                           | 7.600  | 18.182 | 8.128  | 0.163                                      | 0.488       | 0.732       | 0.000                 | 0.000                        | 0.000       | 0.000       | 0.00              |
| 25-Apr                       | 16                                           | 7.153  | 17.113 | 7.650  | 0.153                                      | 0.459       | 0.689       | 0.000                 | 0.000                        | 0.000       | 0.000       | 0.00              |
| 26-Apr                       | 21                                           | 9.388  | 22.461 | 10.041 | 0.201                                      | 0.602       | 0.904       | 0.049                 | 0.000                        | 0.000       | 0.000       | 0.00              |
| 27-Apr                       | 21                                           | 9.388  | 22.461 | 10.041 | 0.201                                      | 0.602       | 0.904       | 1.810                 | 0.000                        | 0.000       | 0.000       | 0.00              |
| 28-Apr                       | 32                                           | 14.305 | 34.226 | 15.300 | 0.306                                      | 0.918       | 1.377       | 0.340                 | 0.000                        | 0.000       | 0.000       | 0.00              |
| 29-Apr                       | 22                                           | 9.835  | 23.530 | 10.519 | 0.210                                      | 0.631       | 0.947       | 0.000                 | 0.000                        | 0.000       | 0.000       | 0.00              |
| 30-Apr                       | 14                                           | 6.259  | 14.974 | 6.694  | 0.134                                      | 0.402       | 0.602       | 0.000                 | 0.000                        | 0.000       | 0.000       | 0.00              |
| 01-May                       | 18                                           | 8.047  | 19.252 | 8.606  | 0.172                                      | 0.516       | 0.775       | 0.000                 | 0.000                        | 0.000       | 0.000       | 0.00              |
| 02-May                       | 15                                           | 6.706  | 16.043 | 7.172  | 0.143                                      | 0.430       | 0.645       | 0.000                 | 0.000                        | 0.000       | 0.000       | 0.00              |
| 03-May                       | 31                                           | 13.858 | 33.156 | 14.822 | 0.296                                      | 0.889       | 1.334       | 0.020                 | 0.000                        | 0.000       | 0.000       | 0.00              |
| 04-May                       | 16                                           | 7.153  | 17.113 | 7.650  | 0.153                                      | 0.459       | 0.689       | 0.000                 | 0.000                        | 0.000       | 0.000       | 0.00              |
| 05-May                       | 16                                           | 7.153  | 17.113 | 7.650  | 0.153                                      | 0.459       | 0.689       | 0.000                 | 0.000                        | 0.000       | 0.000       | 0.00              |
| 06-May                       | 15                                           | 6.706  | 16.043 | 7.172  | 0.143                                      | 0.430       | 0.645       | 0.000                 | 0.000                        | 0.000       | 0.000       | 0.00              |
| 07-May                       | 18                                           | 8.047  | 19.252 | 8.606  | 0.172                                      | 0.516       | 0.775       | 0.000                 | 0.000                        | 0.000       | 0.000       | 0.00              |
| 08-May                       | 14                                           | 6.259  | 14.974 | 6.694  | 0.134                                      | 0.402       | 0.602       | 0.000                 | 0.000                        | 0.000       | 0.000       | 0.00              |
| 09-May                       | 26                                           | 11.623 | 27.808 | 12.431 | 0.249                                      | 0.746       | 1.119       | 0.000                 | 0.000                        | 0.000       | 3.790       | 30.74             |
| 10-May                       | 16                                           | 7.153  | 17.113 | 7.650  | 0.153                                      | 0.459       | 0.689       | 0.000                 | 0.000                        | 0.000       | 0.000       | 0.00              |
| 11-May                       | 17                                           | 7.600  | 18.182 | 8.128  | 0.163                                      | 0.488       | 0.732       | 0.000                 | 0.000                        | 0.000       | 0.000       | 0.00              |
| 12-May                       | 14                                           | 6.259  | 14.974 | 6.694  | 0.134                                      | 0.402       | 0.602       | 0.780                 | 0.000                        | 0.000       | 0.000       | 0.00              |
| 13-May                       | 17                                           | 7.600  | 18.182 | 8.128  | 0.163                                      | 0.488       | 0.732       | 0.000                 | 0.000                        | 0.000       | 0.000       | 0.00              |
| 14-May                       | 14                                           | 6.259  | 14.974 | 6.694  | 0.134                                      | 0.402       | 0.602       | 0.000                 | 0.000                        | 0.000       | 0.000       | 0.00              |
| 15-May                       | 18                                           | 8.047  | 19.252 | 8.606  | 0.172                                      | 0.516       | 0.775       | 0.005                 | 0.000                        | 0.000       | 0.000       | 0.00              |
| 16-May                       | 15                                           | 6.706  | 16.043 | 7.172  | 0.143                                      | 0.430       | 0.645       | 0.000                 | 0.000                        | 0.000       | 0.000       | 0.00              |
| 17-May                       | 13                                           | 5.812  | 13.904 | 6.216  | 0.124                                      | 0.373       | 0.559       | 0.000                 | 0.000                        | 0.000       | 0.000       | 0.00              |
| 18-May                       | 16                                           | 7.153  | 17.113 | 7.650  | 0.153                                      | 0.459       | 0.689       | 0.000                 | 0.000                        | 0.000       | 0.000       | 0.00              |
| 19-May                       | 16                                           | 7.153  | 17.113 | 7.650  | 0.153                                      | 0.459       | 0.689       | 0.005                 | 0.000                        | 0.000       | 0.000       | 0.00              |
| 20-May                       | 16                                           | 7.153  | 17.113 | 7.650  | 0.153                                      | 0.459       | 0.689       | 0.005                 | 0.000                        | 0.000       | 0.000       | 0.00              |
| 21-May                       | 15                                           | 6.706  | 16.043 | 7.172  | 0.143                                      | 0.430       | 0.645       | 0.000                 | 0.000                        | 0.000       | 0.000       | 0.00              |
| 22-May                       | 20                                           | 8.941  | 21.391 | 9.563  | 0.191                                      | 0.574       | 0.861       | 0.000                 | 0.000                        | 0.000       | 0.000       | 0.00              |
| 23-May                       | 20                                           | 8.941  | 21.391 | 9.563  | 0.191                                      | 0.574       | 0.861       | 0.000                 | 0.000                        | 0.000       | 0.000       | 0.00              |
| 24-May                       | 18                                           | 8.047  | 19.252 | 8.606  | 0.172                                      | 0.516       | 0.775       | 0.300                 | 0.000                        | 0.000       | 0.000       | 0.00              |
| 25-May                       | 22                                           | 9.835  | 23.530 | 10.519 | 0.210                                      | 0.631       | 0.947       | 0.550                 | 0.000                        | 0.000       | 0.000       | 0.00              |
| 26-May                       | 17                                           | 7.600  | 18.182 | 8.128  | 0.163                                      | 0.488       | 0.732       | 0.005                 | 0.000                        | 0.000       | 0.000       | 0.00              |
| 27-May                       | 26                                           | 11.623 | 27.808 | 12.431 | 0.249                                      | 0.746       | 1.119       | 1.270                 | 0.000                        | 0.000       | 0.000       | 0.00              |
| 28-May                       | 22                                           | 9.835  | 23.530 | 10.519 | 0.210                                      | 0.631       | 0.947       | 0.050                 | 0.000                        | 0.000       | 0.000       | 0.00              |
| 29-May                       | 21                                           | 9.388  | 22.461 | 10.041 | 0.201                                      | 0.602       | 0.904       | 0.010                 | 0.000                        | 0.000       | 0.000       | 0.00              |
| 30-May                       | 17                                           | 7.600  | 18.182 | 8.128  | 0.163                                      | 0.488       | 0.732       | 0.000                 | 0.000                        | 0.000       | 0.000       | 0.00              |
| 31-May                       | 21                                           | 9.388  | 22.461 | 10.041 | 0.201                                      | 0.602       | 0.904       | 0.450                 | 0.000                        | 0.000       | 0.000       | 0.00              |
| 01-Jun                       | 18                                           | 8.047  | 19.252 | 8.606  | 0.172                                      | 0.516       | 0.775       | 0.830                 | 0.000                        | 0.000       | 0.000       | 0.00              |
| 02-Jun                       | 14                                           | 6.259  | 14.974 | 6.694  | 0.134                                      | 0.402       | 0.602       | 0.030                 | 0.000                        | 0.000       | 0.000       | 0.00              |
| 03-Jun                       | 14                                           | 6.259  | 14.974 | 6.694  | 0.134                                      | 0.402       | 0.602       | 0.000                 | 0.000                        | 0.000       | 0.000       | 0.00              |
| 04-Jun                       | 21                                           | 9.388  | 22.461 | 10.041 | 0.201                                      | 0.602       | 0.904       | 0.000                 | 0.000                        | 0.000       | 0.000       | 0.00              |
| 05-Jun                       | 22                                           | 9.835  | 23.530 | 10.519 | 0.210                                      | 0.631       | 0.947       | 0.850                 | 0.000                        | 0.000       | 0.000       | 0.00              |
| 06-Jun                       | 22                                           | 9.835  | 23.530 | 10.519 | 0.210                                      | 0.631       | 0.947       | 0.060                 | 0.000                        | 0.000       | 0.000       | 0.00              |
| 07-Jun                       | 14                                           | 6.259  | 14.974 | 6.694  | 0.134                                      | 0.402       | 0.602       | 0.005                 | 0.000                        | 0.000       | 0.000       | 0.00              |
| 08-Jun                       | 17                                           | 7.600  | 18.182 | 8.128  | 0.163                                      | 0.488       | 0.732       | 0.000                 | 0.000                        | 0.000       | 0.000       | 0.00              |
| 09-Jun                       | 22                                           | 9.835  | 23.530 | 10.519 | 0.210                                      | 0.631       | 0.947       | 0.010                 | 0.000                        | 0.000       | 0.000       | 0.00              |
| 10-Jun                       | 20                                           | 8.941  | 21.391 | 9.563  | 0.191                                      | 0.574       | 0.861       | 0.000                 | 0.000                        | 0.000       | 0.000       | 0.00              |
| 11-Jun                       | 17                                           | 7.600  | 18.182 | 8.128  | 0.163                                      | 0.488       | 0.732       | 0.005                 | 0.000                        | 0.000       | 0.000       | 0.00              |
| 12-Jun                       | 16                                           | 7.153  | 17.113 | 7.650  | 0.153                                      | 0.459       | 0.689       | 0.320                 | 0.000                        | 0.000       | 0.000       | 0.00              |
| 13-Jun                       | 22                                           | 9.835  | 23.530 | 10.519 | 0.210                                      | 0.631       | 0.947       | 0.005                 | 0.000                        | 0.000       | 0.000       | 0.00              |
| 14-Jun                       | 22                                           | 9.835  | 23.530 | 10.519 | 0.210                                      | 0.631       | 0.947       | 0.230                 | 0.000                        | 0.000       | 0.000       | 0.00              |

**FOSTER WHEELER ENVIRONMENTAL CORPORATION**  
**CALCULATION SHEET - EXCEL 5.0**

**By:** E. Deken, PE  
**Date:** 10/23/98  
**Ch'd By:** Darrel J. Graziani, P.E.  
**Date:** 11/07/98

**Cal. No.:** 981023ED01  
**Rev. No.:** SJRPP 1  
**OFS:** 7830.0020.0054

**Project:** JEA St. Johns Power Park

**Subject:** Fugitive Emission Estimates - Wind Erosion Railcar Limestone Storage Pile

**Assumptions:**

1. The threshold friction velocity was selected based on data available in AP-42, Section 13.2.5.
2. Roughness height was estimated based on largest values listed in AP-42, Section 13.2.5
3. Pile is always at maximum capacity which is maximizing emissions.

**References:**

1. AP-42, Section 13.2.5, Industrial Wind Erosion
2. 1997 Local Climatological Data, NOAA, National Climatic Data Center

**Erosion Potential Calculations**

Threshold Friction Velocity: 1

Roughness Height (m) 0.005

| Number<br>of<br>Disturbances | Fastest Mile Values   |        |        |        | Equivalent Friction Velocities |                |                | Rain Fall<br>(inches) | Erosion Potential          |                            |                            | Emissions<br>(lb) |
|------------------------------|-----------------------|--------|--------|--------|--------------------------------|----------------|----------------|-----------------------|----------------------------|----------------------------|----------------------------|-------------------|
|                              | Anemometer Height (m) |        |        |        | $u^* = 0.1u^*$<br>(m/s)        |                |                |                       | (g/m <sup>2</sup> )        |                            |                            |                   |
|                              | 6.1                   |        | 10     |        | $u_a/u_{*0.2}$                 | $u_a/u_{*0.6}$ | $u_a/u_{*0.9}$ |                       | 36% Pile<br>$u_a/u_{*0.2}$ | 50% Pile<br>$u_a/u_{*0.6}$ | 14% Pile<br>$u_a/u_{*0.9}$ |                   |
|                              | (mph)                 | (m/s)  | (mph)  | (m/s)  |                                |                |                |                       |                            |                            |                            |                   |
| 15-Jun                       | 23                    | 10.282 | 24.600 | 10.997 | 0.220                          | 0.660          | 0.990          | 0.080                 | 0.000                      | 0.000                      | 0.000                      | 0.00              |
| 16-Jun                       | 14                    | 6.259  | 14.974 | 6.694  | 0.134                          | 0.402          | 0.602          | 0.000                 | 0.000                      | 0.000                      | 0.000                      | 0.00              |
| 17-Jun                       | 29                    | 12.964 | 31.017 | 13.866 | 0.277                          | 0.832          | 1.248          | 0.520                 | 0.000                      | 0.000                      | 0.000                      | 0.00              |
| 18-Jun                       | 26                    | 11.623 | 27.808 | 12.431 | 0.249                          | 0.746          | 1.119          | 0.080                 | 0.000                      | 0.000                      | 0.000                      | 0.00              |
| 19-Jun                       | 31                    | 13.858 | 33.156 | 14.822 | 0.296                          | 0.889          | 1.334          | 0.520                 | 0.000                      | 0.000                      | 0.000                      | 0.00              |
| 20-Jun                       | 25                    | 11.176 | 26.739 | 11.953 | 0.239                          | 0.717          | 1.076          | 0.005                 | 0.000                      | 0.000                      | 2.228                      | 18.07             |
| 21-Jun                       | 17                    | 7.600  | 18.182 | 8.128  | 0.163                          | 0.488          | 0.732          | 0.000                 | 0.000                      | 0.000                      | 0.000                      | 0.00              |
| 22-Jun                       | 16                    | 7.153  | 17.113 | 7.650  | 0.153                          | 0.459          | 0.689          | 0.000                 | 0.000                      | 0.000                      | 0.000                      | 0.00              |
| 23-Jun                       | 14                    | 6.259  | 14.974 | 6.694  | 0.134                          | 0.402          | 0.602          | 0.000                 | 0.000                      | 0.000                      | 0.000                      | 0.00              |
| 24-Jun                       | 17                    | 7.600  | 18.182 | 8.128  | 0.163                          | 0.488          | 0.732          | 0.000                 | 0.000                      | 0.000                      | 0.000                      | 0.00              |
| 25-Jun                       | 17                    | 7.600  | 18.182 | 8.128  | 0.163                          | 0.488          | 0.732          | 0.030                 | 0.000                      | 0.000                      | 0.000                      | 0.00              |
| 26-Jun                       | 24                    | 10.729 | 25.669 | 11.475 | 0.230                          | 0.689          | 1.033          | 0.780                 | 0.000                      | 0.000                      | 0.000                      | 0.00              |
| 27-Jun                       | 33                    | 14.752 | 35.295 | 15.778 | 0.316                          | 0.947          | 1.420          | 1.270                 | 0.000                      | 0.000                      | 0.000                      | 0.00              |
| 28-Jun                       | 23                    | 10.282 | 24.600 | 10.997 | 0.220                          | 0.660          | 0.990          | 0.010                 | 0.000                      | 0.000                      | 0.000                      | 0.00              |
| 29-Jun                       | 15                    | 6.706  | 16.043 | 7.172  | 0.143                          | 0.430          | 0.645          | 0.020                 | 0.000                      | 0.000                      | 0.000                      | 0.00              |
| 30-Jun                       | 20                    | 8.941  | 21.391 | 9.563  | 0.191                          | 0.574          | 0.861          | 3.690                 | 0.000                      | 0.000                      | 0.000                      | 0.00              |
| 01-Jul                       | 22                    | 9.835  | 23.530 | 10.519 | 0.210                          | 0.631          | 0.947          | 0.040                 | 0.000                      | 0.000                      | 0.000                      | 0.00              |
| 02-Jul                       | 14                    | 6.259  | 14.974 | 6.694  | 0.134                          | 0.402          | 0.602          | 0.000                 | 0.000                      | 0.000                      | 0.000                      | 0.00              |
| 03-Jul                       | 13                    | 5.812  | 13.904 | 6.216  | 0.124                          | 0.373          | 0.559          | 0.000                 | 0.000                      | 0.000                      | 0.000                      | 0.00              |
| 04-Jul                       | 22                    | 9.835  | 23.530 | 10.519 | 0.210                          | 0.631          | 0.947          | 0.150                 | 0.000                      | 0.000                      | 0.000                      | 0.00              |
| 05-Jul                       | 38                    | 16.988 | 40.643 | 18.169 | 0.363                          | 1.090          | 1.635          | 0.610                 | 0.000                      | 0.000                      | 0.000                      | 0.00              |
| 06-Jul                       | 29                    | 12.964 | 31.017 | 13.866 | 0.277                          | 0.832          | 1.248          | 1.970                 | 0.000                      | 0.000                      | 0.000                      | 0.00              |
| 07-Jul                       | 21                    | 9.388  | 22.461 | 10.041 | 0.201                          | 0.602          | 0.904          | 0.700                 | 0.000                      | 0.000                      | 0.000                      | 0.00              |
| 08-Jul                       | 16                    | 7.153  | 17.113 | 7.650  | 0.153                          | 0.459          | 0.689          | 0.005                 | 0.000                      | 0.000                      | 0.000                      | 0.00              |
| 09-Jul                       | 16                    | 7.153  | 17.113 | 7.650  | 0.153                          | 0.459          | 0.689          | 0.040                 | 0.000                      | 0.000                      | 0.000                      | 0.00              |
| 10-Jul                       | 16                    | 7.153  | 17.113 | 7.650  | 0.153                          | 0.459          | 0.689          | 0.000                 | 0.000                      | 0.000                      | 0.000                      | 0.00              |
| 11-Jul                       | 20                    | 8.941  | 21.391 | 9.563  | 0.191                          | 0.574          | 0.861          | 0.900                 | 0.000                      | 0.000                      | 0.000                      | 0.00              |
| 12-Jul                       | 16                    | 7.153  | 17.113 | 7.650  | 0.153                          | 0.459          | 0.689          | 0.450                 | 0.000                      | 0.000                      | 0.000                      | 0.00              |
| 13-Jul                       | 14                    | 6.259  | 14.974 | 6.694  | 0.134                          | 0.402          | 0.602          | 0.000                 | 0.000                      | 0.000                      | 0.000                      | 0.00              |
| 14-Jul                       | 14                    | 6.259  | 14.974 | 6.694  | 0.134                          | 0.402          | 0.602          | 0.000                 | 0.000                      | 0.000                      | 0.000                      | 0.00              |
| 15-Jul                       | 15                    | 6.706  | 16.043 | 7.172  | 0.143                          | 0.430          | 0.645          | 0.000                 | 0.000                      | 0.000                      | 0.000                      | 0.00              |
| 16-Jul                       | 24                    | 10.729 | 25.669 | 11.475 | 0.230                          | 0.689          | 1.033          | 0.005                 | 0.000                      | 0.000                      | 0.881                      | 7.15              |
| 17-Jul                       | 20                    | 8.941  | 21.391 | 9.563  | 0.191                          | 0.574          | 0.861          | 0.020                 | 0.000                      | 0.000                      | 0.000                      | 0.00              |
| 18-Jul                       | 28                    | 12.517 | 29.948 | 13.388 | 0.268                          | 0.803          | 1.205          | 0.005                 | 0.000                      | 0.000                      | 7.557                      | 61.30             |
| 19-Jul                       | 22                    | 9.835  | 23.530 | 10.519 | 0.210                          | 0.631          | 0.947          | 0.005                 | 0.000                      | 0.000                      | 0.000                      | 0.00              |
| 20-Jul                       | 23                    | 10.282 | 24.600 | 10.997 | 0.220                          | 0.660          | 0.990          | 0.010                 | 0.000                      | 0.000                      | 0.000                      | 0.00              |
| 21-Jul                       | 16                    | 7.153  | 17.113 | 7.650  | 0.153                          | 0.459          | 0.689          | 0.260                 | 0.000                      | 0.000                      | 0.000                      | 0.00              |
| 22-Jul                       | 17                    | 7.600  | 18.182 | 8.128  | 0.163                          | 0.488          | 0.732          | 0.000                 | 0.000                      | 0.000                      | 0.000                      | 0.00              |
| 23-Jul                       | 22                    | 9.835  | 23.530 | 10.519 | 0.210                          | 0.631          | 0.947          | 0.010                 | 0.000                      | 0.000                      | 0.000                      | 0.00              |
| 24-Jul                       | 14                    | 6.259  | 14.974 | 6.694  | 0.134                          | 0.402          | 0.602          | 0.140                 | 0.000                      | 0.000                      | 0.000                      | 0.00              |
| 25-Jul                       | 24                    | 10.729 | 25.669 | 11.475 | 0.230                          | 0.689          | 1.033          | 1.060                 | 0.000                      | 0.000                      | 0.000                      | 0.00              |
| 26-Jul                       | 23                    | 10.282 | 24.600 | 10.997 | 0.220                          | 0.660          | 0.990          | 0.010                 | 0.000                      | 0.000                      | 0.000                      | 0.00              |
| 27-Jul                       | 18                    | 8.047  | 19.252 | 8.606  | 0.172                          | 0.516          | 0.775          | 0.160                 | 0.000                      | 0.000                      | 0.000                      | 0.00              |
| 28-Jul                       | 16                    | 7.153  | 17.113 | 7.650  | 0.153                          | 0.459          | 0.689          | 0.000                 | 0.000                      | 0.000                      | 0.000                      | 0.00              |
| 29-Jul                       | 18                    | 8.047  | 19.252 | 8.606  | 0.172                          | 0.516          | 0.775          | 0.000                 | 0.000                      | 0.000                      | 0.000                      | 0.00              |
| 30-Jul                       | 16                    | 7.153  | 17.113 | 7.650  | 0.153                          | 0.459          | 0.689          | 0.160                 | 0.000                      | 0.000                      | 0.000                      | 0.00              |
| 31-Jul                       | 16                    | 7.153  | 17.113 | 7.650  | 0.153                          | 0.459          | 0.689          | 1.000                 | 0.000                      | 0.000                      | 0.000                      | 0.00              |
| 01-Aug                       | 21                    | 9.388  | 22.461 | 10.041 | 0.201                          | 0.602          | 0.904          | 3.730                 | 0.000                      | 0.000                      | 0.000                      | 0.00              |
| 02-Aug                       | 20                    | 8.941  | 21.391 | 9.563  | 0.191                          | 0.574          | 0.861          | 0.500                 | 0.000                      | 0.000                      | 0.000                      | 0.00              |
| 03-Aug                       | 24                    | 10.729 | 25.669 | 11.475 | 0.230                          | 0.689          | 1.033          | 0.160                 | 0.000                      | 0.000                      | 0.000                      | 0.00              |
| 04-Aug                       | 16                    | 7.153  | 17.113 | 7.650  | 0.153                          | 0.459          | 0.689          | 0.000                 | 0.000                      | 0.000                      | 0.000                      | 0.00              |
| 05-Aug                       | 13                    | 5.812  | 13.904 | 6.216  | 0.124                          | 0.373          | 0.559          | 0.000                 | 0.000                      | 0.000                      | 0.000                      | 0.00              |
| 06-Aug                       | 21                    | 9.388  | 22.461 | 10.041 | 0.201                          | 0.602          | 0.904          | 0.010                 | 0.000                      | 0.000                      | 0.000                      | 0.00              |
| 07-Aug                       | 18                    | 8.047  | 19.252 | 8.606  | 0.172                          | 0.516          | 0.775          | 0.010                 | 0.000                      | 0.000                      | 0.000                      | 0.00              |
| 08-Aug                       | 20                    | 8.941  | 21.391 | 9.563  | 0.191                          | 0.574          | 0.861          | 0.060                 | 0.000                      | 0.000                      | 0.000                      | 0.00              |

**FOSTER WHEELER ENVIRONMENTAL CORPORATION  
CALCULATION SHEET - EXCEL 5.0**

**By:** E. Deken, PE  
**Date:** 10/23/98  
**Ch'd By:** Darrel J. Graziani, P.E.  
**Date:** 11/07/98

**Cal. No.:** 981023ED01  
**Rev. No.:** SJRPP 1  
**OFS:** 7830.0020.0054

**Project:** JEA St. Johns Power Park

**Subject:** Fugitive Emission Estimates - Wind Erosion Railcar Limestone Storage Pile

**Assumptions:**

1. The threshold friction velocity was selected based on data available in AP-42, Section 13.2.5.
2. Roughness height was estimated based on largest values listed in AP-42, Section 13.2.5
3. Pile is always at maximum capacity which is maximizing emissions.

**References:**

1. AP-42, Section 13.2.5, Industrial Wind Erosion
2. 1997 Local Climatological Data, NOAA, National Climatic Data Center

**Erosion Potential Calculations**

Threshold Friction Velocity:

1

Roughness Height (m)

0.005

| Number<br>of<br>Disturbances | Fastest Mile Values<br>Anemometer Height (m) |        |        |        | Equivalent Friction Velocities<br>$u^*=0.1u'$<br>(m/s) |                 |                 | Rain Fall<br>(inches) | Erosion Potential<br>(g/m^2) |                             |                             | Emissions<br>(lb) |
|------------------------------|----------------------------------------------|--------|--------|--------|--------------------------------------------------------|-----------------|-----------------|-----------------------|------------------------------|-----------------------------|-----------------------------|-------------------|
|                              | 6.1                                          |        | 10     |        | $u_t/u_t^*:0.2$                                        | $u_t/u_t^*:0.6$ | $u_t/u_t^*:0.9$ |                       | 36% Pile<br>$u_t/u_t^*:0.2$  | 50% Pile<br>$u_t/u_t^*:0.6$ | 14% Pile<br>$u_t/u_t^*:0.9$ |                   |
|                              | (mph)                                        | (m/s)  | (mph)  | (m/s)  |                                                        |                 |                 |                       |                              |                             |                             |                   |
| 09-Aug                       | 17                                           | 7.600  | 18.182 | 8.128  | 0.163                                                  | 0.488           | 0.732           | 0.020                 | 0.000                        | 0.000                       | 0.000                       | 0.00              |
| 10-Aug                       | 17                                           | 7.600  | 18.182 | 8.128  | 0.163                                                  | 0.488           | 0.732           | 0.220                 | 0.000                        | 0.000                       | 0.000                       | 0.00              |
| 11-Aug                       | 15                                           | 6.706  | 16.043 | 7.172  | 0.143                                                  | 0.430           | 0.645           | 0.005                 | 0.000                        | 0.000                       | 0.000                       | 0.00              |
| 12-Aug                       | 15                                           | 6.706  | 16.043 | 7.172  | 0.143                                                  | 0.430           | 0.645           | 0.000                 | 0.000                        | 0.000                       | 0.000                       | 0.00              |
| 13-Aug                       | 15                                           | 6.706  | 16.043 | 7.172  | 0.143                                                  | 0.430           | 0.645           | 0.450                 | 0.000                        | 0.000                       | 0.000                       | 0.00              |
| 14-Aug                       | 13                                           | 5.812  | 13.904 | 6.216  | 0.124                                                  | 0.373           | 0.559           | 0.010                 | 0.000                        | 0.000                       | 0.000                       | 0.00              |
| 15-Aug                       | 23                                           | 10.282 | 24.600 | 10.997 | 0.220                                                  | 0.660           | 0.990           | 0.005                 | 0.000                        | 0.000                       | 0.000                       | 0.00              |
| 16-Aug                       | 30                                           | 13.411 | 32.087 | 14.344 | 0.287                                                  | 0.861           | 1.291           | 0.710                 | 0.000                        | 0.000                       | 0.000                       | 0.00              |
| 17-Aug                       | 14                                           | 6.259  | 14.974 | 6.694  | 0.134                                                  | 0.402           | 0.602           | 0.000                 | 0.000                        | 0.000                       | 0.000                       | 0.00              |
| 18-Aug                       | 26                                           | 11.623 | 27.808 | 12.431 | 0.249                                                  | 0.746           | 1.119           | 0.270                 | 0.000                        | 0.000                       | 0.000                       | 0.00              |
| 19-Aug                       | 16                                           | 7.153  | 17.113 | 7.650  | 0.153                                                  | 0.459           | 0.689           | 0.240                 | 0.000                        | 0.000                       | 0.000                       | 0.00              |
| 20-Aug                       | 17                                           | 7.600  | 18.182 | 8.128  | 0.163                                                  | 0.488           | 0.732           | 0.000                 | 0.000                        | 0.000                       | 0.000                       | 0.00              |
| 21-Aug                       | 21                                           | 9.388  | 22.461 | 10.041 | 0.201                                                  | 0.602           | 0.904           | 0.160                 | 0.000                        | 0.000                       | 0.000                       | 0.00              |
| 22-Aug                       | 15                                           | 6.706  | 16.043 | 7.172  | 0.143                                                  | 0.430           | 0.645           | 0.000                 | 0.000                        | 0.000                       | 0.000                       | 0.00              |
| 23-Aug                       | 21                                           | 9.388  | 22.461 | 10.041 | 0.201                                                  | 0.602           | 0.904           | 0.020                 | 0.000                        | 0.000                       | 0.000                       | 0.00              |
| 24-Aug                       | 29                                           | 12.964 | 31.017 | 13.866 | 0.277                                                  | 0.832           | 1.248           | 1.590                 | 0.000                        | 0.000                       | 0.000                       | 0.00              |
| 25-Aug                       | 18                                           | 8.047  | 19.252 | 8.606  | 0.172                                                  | 0.516           | 0.775           | 0.000                 | 0.000                        | 0.000                       | 0.000                       | 0.00              |
| 26-Aug                       | 20                                           | 8.941  | 21.391 | 9.563  | 0.191                                                  | 0.574           | 0.861           | 0.000                 | 0.000                        | 0.000                       | 0.000                       | 0.00              |
| 27-Aug                       | 11                                           | 4.917  | 11.765 | 5.259  | 0.105                                                  | 0.316           | 0.473           | 0.000                 | 0.000                        | 0.000                       | 0.000                       | 0.00              |
| 28-Aug                       | 16                                           | 7.153  | 17.113 | 7.650  | 0.153                                                  | 0.459           | 0.689           | 0.000                 | 0.000                        | 0.000                       | 0.000                       | 0.00              |
| 29-Aug                       | 17                                           | 7.600  | 18.182 | 8.128  | 0.163                                                  | 0.488           | 0.732           | 0.000                 | 0.000                        | 0.000                       | 0.000                       | 0.00              |
| 30-Aug                       | 21                                           | 9.388  | 22.461 | 10.041 | 0.201                                                  | 0.602           | 0.904           | 0.080                 | 0.000                        | 0.000                       | 0.000                       | 0.00              |
| 31-Aug                       | 16                                           | 7.153  | 17.113 | 7.650  | 0.153                                                  | 0.459           | 0.689           | 0.000                 | 0.000                        | 0.000                       | 0.000                       | 0.00              |
| 01-Sep                       | 21                                           | 9.388  | 22.461 | 10.041 | 0.201                                                  | 0.602           | 0.904           | 0.005                 | 0.000                        | 0.000                       | 0.000                       | 0.00              |
| 02-Sep                       | 16                                           | 7.153  | 17.113 | 7.650  | 0.153                                                  | 0.459           | 0.689           | 0.130                 | 0.000                        | 0.000                       | 0.000                       | 0.00              |
| 03-Sep                       | 11                                           | 4.917  | 11.765 | 5.259  | 0.105                                                  | 0.316           | 0.473           | 0.000                 | 0.000                        | 0.000                       | 0.000                       | 0.00              |
| 04-Sep                       | 26                                           | 11.623 | 27.808 | 12.431 | 0.249                                                  | 0.746           | 1.119           | 0.005                 | 0.000                        | 0.000                       | 3.790                       | 30.74             |
| 05-Sep                       | 21                                           | 9.388  | 22.461 | 10.041 | 0.201                                                  | 0.602           | 0.904           | 0.000                 | 0.000                        | 0.000                       | 0.000                       | 0.00              |
| 06-Sep                       | 18                                           | 8.047  | 19.252 | 8.606  | 0.172                                                  | 0.516           | 0.775           | 0.000                 | 0.000                        | 0.000                       | 0.000                       | 0.00              |
| 07-Sep                       | 16                                           | 7.153  | 17.113 | 7.650  | 0.153                                                  | 0.459           | 0.689           | 0.000                 | 0.000                        | 0.000                       | 0.000                       | 0.00              |
| 08-Sep                       | 14                                           | 6.259  | 14.974 | 6.694  | 0.134                                                  | 0.402           | 0.602           | 0.000                 | 0.000                        | 0.000                       | 0.000                       | 0.00              |
| 09-Sep                       | 14                                           | 6.259  | 14.974 | 6.694  | 0.134                                                  | 0.402           | 0.602           | 0.000                 | 0.000                        | 0.000                       | 0.000                       | 0.00              |
| 10-Sep                       | 17                                           | 7.600  | 18.182 | 8.128  | 0.163                                                  | 0.488           | 0.732           | 0.005                 | 0.000                        | 0.000                       | 0.000                       | 0.00              |
| 11-Sep                       | 15                                           | 6.706  | 16.043 | 7.172  | 0.143                                                  | 0.430           | 0.645           | 0.000                 | 0.000                        | 0.000                       | 0.000                       | 0.00              |
| 12-Sep                       | 14                                           | 6.259  | 14.974 | 6.694  | 0.134                                                  | 0.402           | 0.602           | 0.000                 | 0.000                        | 0.000                       | 0.000                       | 0.00              |
| 13-Sep                       | 14                                           | 6.259  | 14.974 | 6.694  | 0.134                                                  | 0.402           | 0.602           | 0.000                 | 0.000                        | 0.000                       | 0.000                       | 0.00              |
| 14-Sep                       | 20                                           | 8.941  | 21.391 | 9.563  | 0.191                                                  | 0.574           | 0.861           | 0.030                 | 0.000                        | 0.000                       | 0.000                       | 0.00              |
| 15-Sep                       | 14                                           | 6.259  | 14.974 | 6.694  | 0.134                                                  | 0.402           | 0.602           | 0.000                 | 0.000                        | 0.000                       | 0.000                       | 0.00              |
| 16-Sep                       | 14                                           | 6.259  | 14.974 | 6.694  | 0.134                                                  | 0.402           | 0.602           | 0.000                 | 0.000                        | 0.000                       | 0.000                       | 0.00              |
| 17-Sep                       | 16                                           | 7.153  | 17.113 | 7.650  | 0.153                                                  | 0.459           | 0.689           | 0.000                 | 0.000                        | 0.000                       | 0.000                       | 0.00              |
| 18-Sep                       | 11                                           | 4.917  | 11.765 | 5.259  | 0.105                                                  | 0.316           | 0.473           | 0.000                 | 0.000                        | 0.000                       | 0.000                       | 0.00              |
| 19-Sep                       | 14                                           | 6.259  | 14.974 | 6.694  | 0.134                                                  | 0.402           | 0.602           | 0.000                 | 0.000                        | 0.000                       | 0.000                       | 0.00              |
| 20-Sep                       | 11                                           | 4.917  | 11.765 | 5.259  | 0.105                                                  | 0.316           | 0.473           | 0.000                 | 0.000                        | 0.000                       | 0.000                       | 0.00              |
| 21-Sep                       | 16                                           | 7.153  | 17.113 | 7.650  | 0.153                                                  | 0.459           | 0.689           | 0.000                 | 0.000                        | 0.000                       | 0.000                       | 0.00              |
| 22-Sep                       | 17                                           | 7.600  | 18.182 | 8.128  | 0.163                                                  | 0.488           | 0.732           | 0.000                 | 0.000                        | 0.000                       | 0.000                       | 0.00              |
| 23-Sep                       | 20                                           | 8.941  | 21.391 | 9.563  | 0.191                                                  | 0.574           | 0.861           | 0.180                 | 0.000                        | 0.000                       | 0.000                       | 0.00              |
| 24-Sep                       | 14                                           | 6.259  | 14.974 | 6.694  | 0.134                                                  | 0.402           | 0.602           | 1.000                 | 0.000                        | 0.000                       | 0.000                       | 0.00              |
| 25-Sep                       | 23                                           | 10.282 | 24.600 | 10.997 | 0.220                                                  | 0.660           | 0.990           | 0.280                 | 0.000                        | 0.000                       | 0.000                       | 0.00              |
| 26-Sep                       | 16                                           | 7.153  | 17.113 | 7.650  | 0.153                                                  | 0.459           | 0.689           | 1.080                 | 0.000                        | 0.000                       | 0.000                       | 0.00              |
| 27-Sep                       | 7                                            | 3.129  | 7.487  | 3.347  | 0.067                                                  | 0.201           | 0.301           | 2.250                 | 0.000                        | 0.000                       | 0.000                       | 0.00              |
| 28-Sep                       | 15                                           | 6.706  | 16.043 | 7.172  | 0.143                                                  | 0.430           | 0.645           | 0.010                 | 0.000                        | 0.000                       | 0.000                       | 0.00              |
| 29-Sep                       | 16                                           | 7.153  | 17.113 | 7.650  | 0.153                                                  | 0.459           | 0.689           | 0.000                 | 0.000                        | 0.000                       | 0.000                       | 0.00              |
| 30-Sep                       | 17                                           | 7.600  | 18.182 | 8.128  | 0.163                                                  | 0.488           | 0.732           | 0.000                 | 0.000                        | 0.000                       | 0.000                       | 0.00              |
| 01-Oct                       | 17                                           | 7.600  | 18.182 | 8.128  | 0.163                                                  | 0.488           | 0.732           | 0.000                 | 0.000                        | 0.000                       | 0.000                       | 0.00              |
| 02-Oct                       | 23                                           | 10.282 | 24.600 | 10.997 | 0.220                                                  | 0.660           | 0.990           | 0.000                 | 0.000                        | 0.000                       | 0.000                       | 0.00              |

**FOSTER WHEELER ENVIRONMENTAL CORPORATION**  
**CALCULATION SHEET - EXCEL 5.0**

By: E. Deken, PE  
 Date: 10/23/98  
 Ck'd By: Darrel J. Graziani, P.E.  
 Date: 11/07/98

Cal. No.: 981023ED01  
 Rev. No.: SJRPP 1  
 OFS: 7830.0020.0054

**Project:** JEA St. Johns Power Park

**Subject:** Fugitive Emission Estimates - Wind Erosion Railcar Limestone Storage Pile

**Assumptions:**

1. The threshold friction velocity was selected based on data available in AP-42, Section 13.2.5.
2. Roughness height was estimated based on largest values listed in AP-42, Section 13.2.5
3. Pile is always at maximum capacity which is maximizing emissions.

**References:**

1. AP-42, Section 13.2.5, Industrial Wind Erosion
2. 1997 Local Climatological Data, NOAA, National Climatic Data Center

**Erosion Potential Calculations**

Threshold Friction Velocity: 1  
 Roughness Height (m) 0.005

| Number<br>of<br>Disturbances | Fastest Mile Values<br>Anemometer Height (m) |        |        |        | Equivalent Friction Velocities<br>u*~0.1u* |             |             | Rain Fall<br>(Inches) | Erosion Potential<br>(g/m^2) |             |             | Emissions<br>(lb) |
|------------------------------|----------------------------------------------|--------|--------|--------|--------------------------------------------|-------------|-------------|-----------------------|------------------------------|-------------|-------------|-------------------|
|                              | 6.1                                          |        | 10     |        | u*~0.1u*<br>(m/s)                          |             |             |                       | 36% Pile                     | 50% Pile    | 14% Pile    |                   |
|                              | (mph)                                        | (m/s)  | (mph)  | (m/s)  | u_a/u_t:0.2                                | u_a/u_t:0.6 | u_a/u_t:0.9 |                       | u_a/u_t:0.2                  | u_a/u_t:0.6 | u_a/u_t:0.9 |                   |
| 03-Oct                       | 17                                           | 7.600  | 18.182 | 8.128  | 0.163                                      | 0.488       | 0.732       | 0.005                 | 0.000                        | 0.000       | 0.000       | 0.00              |
| 04-Oct                       | 21                                           | 9.388  | 22.461 | 10.041 | 0.201                                      | 0.602       | 0.904       | 0.005                 | 0.000                        | 0.000       | 0.000       | 0.00              |
| 05-Oct                       | 20                                           | 8.941  | 21.391 | 9.563  | 0.191                                      | 0.574       | 0.861       | 0.000                 | 0.000                        | 0.000       | 0.000       | 0.00              |
| 06-Oct                       | 15                                           | 6.706  | 16.043 | 7.172  | 0.143                                      | 0.430       | 0.645       | 0.000                 | 0.000                        | 0.000       | 0.000       | 0.00              |
| 07-Oct                       | 18                                           | 8.047  | 19.252 | 8.606  | 0.172                                      | 0.516       | 0.775       | 0.000                 | 0.000                        | 0.000       | 0.000       | 0.00              |
| 08-Oct                       | 21                                           | 9.388  | 22.461 | 10.041 | 0.201                                      | 0.602       | 0.904       | 0.005                 | 0.000                        | 0.000       | 0.000       | 0.00              |
| 09-Oct                       | 23                                           | 10.282 | 24.600 | 10.997 | 0.220                                      | 0.660       | 0.990       | 0.170                 | 0.000                        | 0.000       | 0.000       | 0.00              |
| 10-Oct                       | 21                                           | 9.388  | 22.461 | 10.041 | 0.201                                      | 0.602       | 0.904       | 0.000                 | 0.000                        | 0.000       | 0.000       | 0.00              |
| 11-Oct                       | 20                                           | 8.941  | 21.391 | 9.563  | 0.191                                      | 0.574       | 0.861       | 0.090                 | 0.000                        | 0.000       | 0.000       | 0.00              |
| 12-Oct                       | 20                                           | 8.941  | 21.391 | 9.563  | 0.191                                      | 0.574       | 0.861       | 0.050                 | 0.000                        | 0.000       | 0.000       | 0.00              |
| 13-Oct                       | 15                                           | 6.706  | 16.043 | 7.172  | 0.143                                      | 0.430       | 0.645       | 0.005                 | 0.000                        | 0.000       | 0.000       | 0.00              |
| 14-Oct                       | 13                                           | 5.812  | 13.904 | 6.216  | 0.124                                      | 0.373       | 0.559       | 0.000                 | 0.000                        | 0.000       | 0.000       | 0.00              |
| 15-Oct                       | 15                                           | 6.706  | 16.043 | 7.172  | 0.143                                      | 0.430       | 0.645       | 0.240                 | 0.000                        | 0.000       | 0.000       | 0.00              |
| 16-Oct                       | 16                                           | 7.153  | 17.113 | 7.650  | 0.153                                      | 0.459       | 0.689       | 0.050                 | 0.000                        | 0.000       | 0.000       | 0.00              |
| 17-Oct                       | 11                                           | 4.917  | 11.765 | 5.259  | 0.105                                      | 0.316       | 0.473       | 0.000                 | 0.000                        | 0.000       | 0.000       | 0.00              |
| 18-Oct                       | 14                                           | 6.259  | 14.974 | 6.694  | 0.134                                      | 0.402       | 0.602       | 0.050                 | 0.000                        | 0.000       | 0.000       | 0.00              |
| 19-Oct                       | 20                                           | 8.941  | 21.391 | 9.563  | 0.191                                      | 0.574       | 0.861       | 0.000                 | 0.000                        | 0.000       | 0.000       | 0.00              |
| 20-Oct                       | 15                                           | 6.706  | 16.043 | 7.172  | 0.143                                      | 0.430       | 0.645       | 0.000                 | 0.000                        | 0.000       | 0.000       | 0.00              |
| 21-Oct                       | 10                                           | 4.470  | 10.696 | 4.781  | 0.096                                      | 0.287       | 0.430       | 0.000                 | 0.000                        | 0.000       | 0.000       | 0.00              |
| 22-Oct                       | 14                                           | 6.259  | 14.974 | 6.694  | 0.134                                      | 0.402       | 0.602       | 0.000                 | 0.000                        | 0.000       | 0.000       | 0.00              |
| 23-Oct                       | 14                                           | 6.259  | 14.974 | 6.694  | 0.134                                      | 0.402       | 0.602       | 0.000                 | 0.000                        | 0.000       | 0.000       | 0.00              |
| 24-Oct                       | 20                                           | 8.941  | 21.391 | 9.563  | 0.191                                      | 0.574       | 0.861       | 0.290                 | 0.000                        | 0.000       | 0.000       | 0.00              |
| 25-Oct                       | 11                                           | 4.917  | 11.765 | 5.259  | 0.105                                      | 0.316       | 0.473       | 0.000                 | 0.000                        | 0.000       | 0.000       | 0.00              |
| 26-Oct                       | 22                                           | 9.835  | 23.530 | 10.519 | 0.210                                      | 0.631       | 0.947       | 0.580                 | 0.000                        | 0.000       | 0.000       | 0.00              |
| 27-Oct                       | 22                                           | 9.835  | 23.530 | 10.519 | 0.210                                      | 0.631       | 0.947       | 2.640                 | 0.000                        | 0.000       | 0.000       | 0.00              |
| 28-Oct                       | 14                                           | 6.259  | 14.974 | 6.694  | 0.134                                      | 0.402       | 0.602       | 0.000                 | 0.000                        | 0.000       | 0.000       | 0.00              |
| 29-Oct                       | 10                                           | 4.470  | 10.696 | 4.781  | 0.096                                      | 0.287       | 0.430       | 0.000                 | 0.000                        | 0.000       | 0.000       | 0.00              |
| 30-Oct                       | 13                                           | 5.812  | 13.904 | 6.216  | 0.124                                      | 0.373       | 0.559       | 0.000                 | 0.000                        | 0.000       | 0.000       | 0.00              |
| 31-Oct                       | 13                                           | 5.812  | 13.904 | 6.216  | 0.124                                      | 0.373       | 0.559       | 0.680                 | 0.000                        | 0.000       | 0.000       | 0.00              |
| 01-Nov                       | 16                                           | 7.153  | 17.113 | 7.650  | 0.153                                      | 0.459       | 0.689       | 0.000                 | 0.000                        | 0.000       | 0.000       | 0.00              |
| 02-Nov                       | 21                                           | 9.388  | 22.461 | 10.041 | 0.201                                      | 0.602       | 0.904       | 0.180                 | 0.000                        | 0.000       | 0.000       | 0.00              |
| 03-Nov                       | 21                                           | 9.388  | 22.461 | 10.041 | 0.201                                      | 0.602       | 0.904       | 0.000                 | 0.000                        | 0.000       | 0.000       | 0.00              |
| 04-Nov                       | 14                                           | 6.259  | 14.974 | 6.694  | 0.134                                      | 0.402       | 0.602       | 0.000                 | 0.000                        | 0.000       | 0.000       | 0.00              |
| 05-Nov                       | 17                                           | 7.600  | 18.182 | 8.128  | 0.163                                      | 0.488       | 0.732       | 0.000                 | 0.000                        | 0.000       | 0.000       | 0.00              |
| 06-Nov                       | 11                                           | 4.917  | 11.765 | 5.259  | 0.105                                      | 0.316       | 0.473       | 0.005                 | 0.000                        | 0.000       | 0.000       | 0.00              |
| 07-Nov                       | 17                                           | 7.600  | 18.182 | 8.128  | 0.163                                      | 0.488       | 0.732       | 0.150                 | 0.000                        | 0.000       | 0.000       | 0.00              |
| 08-Nov                       | 18                                           | 8.047  | 19.252 | 8.606  | 0.172                                      | 0.516       | 0.775       | 0.000                 | 0.000                        | 0.000       | 0.000       | 0.00              |
| 09-Nov                       | 15                                           | 6.706  | 16.043 | 7.172  | 0.143                                      | 0.430       | 0.645       | 0.000                 | 0.000                        | 0.000       | 0.000       | 0.00              |
| 10-Nov                       | 16                                           | 7.153  | 17.113 | 7.650  | 0.153                                      | 0.459       | 0.689       | 0.000                 | 0.000                        | 0.000       | 0.000       | 0.00              |
| 11-Nov                       | 13                                           | 5.812  | 13.904 | 6.216  | 0.124                                      | 0.373       | 0.559       | 0.000                 | 0.000                        | 0.000       | 0.000       | 0.00              |
| 12-Nov                       | 15                                           | 6.706  | 16.043 | 7.172  | 0.143                                      | 0.430       | 0.645       | 0.280                 | 0.000                        | 0.000       | 0.000       | 0.00              |
| 13-Nov                       | 16                                           | 7.153  | 17.113 | 7.650  | 0.153                                      | 0.459       | 0.689       | 0.650                 | 0.000                        | 0.000       | 0.000       | 0.00              |
| 14-Nov                       | 28                                           | 12.517 | 29.948 | 13.388 | 0.268                                      | 0.803       | 1.205       | 0.000                 | 0.000                        | 0.000       | 7.557       | 61.30             |
| 15-Nov                       | 13                                           | 5.812  | 13.904 | 6.216  | 0.124                                      | 0.373       | 0.559       | 0.000                 | 0.000                        | 0.000       | 0.000       | 0.00              |
| 16-Nov                       | 14                                           | 6.259  | 14.974 | 6.694  | 0.134                                      | 0.402       | 0.602       | 0.005                 | 0.000                        | 0.000       | 0.000       | 0.00              |
| 17-Nov                       | 15                                           | 6.706  | 16.043 | 7.172  | 0.143                                      | 0.430       | 0.645       | 0.000                 | 0.000                        | 0.000       | 0.000       | 0.00              |
| 18-Nov                       | 13                                           | 5.812  | 13.904 | 6.216  | 0.124                                      | 0.373       | 0.559       | 0.000                 | 0.000                        | 0.000       | 0.000       | 0.00              |
| 19-Nov                       | 8                                            | 3.576  | 8.556  | 3.825  | 0.077                                      | 0.230       | 0.344       | 0.005                 | 0.000                        | 0.000       | 0.000       | 0.00              |
| 20-Nov                       | 14                                           | 6.259  | 14.974 | 6.694  | 0.134                                      | 0.402       | 0.602       | 0.000                 | 0.000                        | 0.000       | 0.000       | 0.00              |
| 21-Nov                       | 14                                           | 6.259  | 14.974 | 6.694  | 0.134                                      | 0.402       | 0.602       | 0.000                 | 0.000                        | 0.000       | 0.000       | 0.00              |
| 22-Nov                       | 14                                           | 6.259  | 14.974 | 6.694  | 0.134                                      | 0.402       | 0.602       | 0.000                 | 0.000                        | 0.000       | 0.000       | 0.00              |
| 23-Nov                       | 13                                           | 5.812  | 13.904 | 6.216  | 0.124                                      | 0.373       | 0.559       | 0.005                 | 0.000                        | 0.000       | 0.000       | 0.00              |
| 24-Nov                       | 15                                           | 6.706  | 16.043 | 7.172  | 0.143                                      | 0.430       | 0.645       | 0.000                 | 0.000                        | 0.000       | 0.000       | 0.00              |
| 25-Nov                       | 18                                           | 8.047  | 19.252 | 8.606  | 0.172                                      | 0.516       | 0.775       | 0.000                 | 0.000                        | 0.000       | 0.000       | 0.00              |
| 26-Nov                       | 14                                           | 6.259  | 14.974 | 6.694  | 0.134                                      | 0.402       | 0.602       | 0.000                 | 0.000                        | 0.000       | 0.000       | 0.00              |

**FOSTER WHEELER ENVIRONMENTAL CORPORATION**  
**CALCULATION SHEET - EXCEL 5.0**

By: E. Deken, PE  
 Date: 10/23/98  
 Ck'd By: Darrel J. Graziani, P.E.  
 Date: 11/07/98

Cal. No.: 981023ED01  
 Rev. No.: SJRPP 1  
 OFS: 7830.0020.0054

**Project:** JEA St. Johns Power Park

**Subject:** Fugitive Emission Estimates - Wind Erosion Railcar Limestone Storage Pile

**Assumptions:**

1. The threshold friction velocity was selected based on data available in AP-42, Section 13.2.5.
2. Roughness height was estimated based on largest values listed in AP-42, Section 13.2.5
3. Pile is always at maximum capacity which is maximizing emissions.

**References:**

1. AP-42, Section 13.2.5, Industrial Wind Erosion
2. 1997 Local Climatological Data, NOAA, National Climatic Data Center

**Erosion Potential Calculations**

Threshold Friction Velocity:

1

Roughness Height (m)

0.005

| Number<br>of<br>Disturbances | Fastest Mile Values<br>Anemometer Height (m) |        |        |        | Equivalent Friction Velocities<br>u* = 0.1u*<br>(m/s) |                                     |                                     | Rain Fall<br>(inches) | Erosion Potential<br>(g/m^2)        |                                     |                                     | Emissions<br>(lb) |
|------------------------------|----------------------------------------------|--------|--------|--------|-------------------------------------------------------|-------------------------------------|-------------------------------------|-----------------------|-------------------------------------|-------------------------------------|-------------------------------------|-------------------|
|                              | 6:1                                          |        | 10:1   |        |                                                       |                                     |                                     |                       | 36% Pile                            | 50% Pile                            | 14% Pile                            |                   |
|                              | (mph)                                        | (m/s)  | (mph)  | (m/s)  | u <sub>s</sub> /u <sub>s</sub> :0.2                   | u <sub>s</sub> /u <sub>s</sub> :0.6 | u <sub>s</sub> /u <sub>s</sub> :0.9 |                       | u <sub>s</sub> /u <sub>s</sub> :0.2 | u <sub>s</sub> /u <sub>s</sub> :0.6 | u <sub>s</sub> /u <sub>s</sub> :0.9 |                   |
| 27-Nov                       | 15                                           | 6.706  | 16.043 | 7.172  | 0.143                                                 | 0.430                               | 0.645                               | 0.000                 | 0.000                               | 0.000                               | 0.000                               | 0.00              |
| 28-Nov                       | 9                                            | 4.023  | 9.626  | 4.303  | 0.086                                                 | 0.258                               | 0.387                               | 0.005                 | 0.000                               | 0.000                               | 0.000                               | 0.00              |
| 29-Nov                       | 25                                           | 11.176 | 26.739 | 11.953 | 0.239                                                 | 0.717                               | 1.076                               | 1.130                 | 0.000                               | 0.000                               | 0.000                               | 0.00              |
| 30-Nov                       | 21                                           | 9.388  | 22.461 | 10.041 | 0.201                                                 | 0.602                               | 0.904                               | 0.020                 | 0.000                               | 0.000                               | 0.000                               | 0.00              |
| 01-Dec                       | 20                                           | 8.941  | 21.391 | 9.563  | 0.191                                                 | 0.574                               | 0.861                               | 0.000                 | 0.000                               | 0.000                               | 0.000                               | 0.00              |
| 02-Dec                       | 16                                           | 7.153  | 17.113 | 7.650  | 0.153                                                 | 0.459                               | 0.689                               | 0.000                 | 0.000                               | 0.000                               | 0.000                               | 0.00              |
| 03-Dec                       | 15                                           | 6.706  | 16.043 | 7.172  | 0.143                                                 | 0.430                               | 0.645                               | 0.100                 | 0.000                               | 0.000                               | 0.000                               | 0.00              |
| 04-Dec                       | 21                                           | 9.388  | 22.461 | 10.041 | 0.201                                                 | 0.602                               | 0.904                               | 0.100                 | 0.000                               | 0.000                               | 0.000                               | 0.00              |
| 05-Dec                       | 20                                           | 8.941  | 21.391 | 9.563  | 0.191                                                 | 0.574                               | 0.861                               | 0.000                 | 0.000                               | 0.000                               | 0.000                               | 0.00              |
| 06-Dec                       | 20                                           | 8.941  | 21.391 | 9.563  | 0.191                                                 | 0.574                               | 0.861                               | 0.000                 | 0.000                               | 0.000                               | 0.000                               | 0.00              |
| 07-Dec                       | 11                                           | 4.917  | 11.765 | 5.259  | 0.105                                                 | 0.316                               | 0.473                               | 0.000                 | 0.000                               | 0.000                               | 0.000                               | 0.00              |
| 08-Dec                       | 14                                           | 6.259  | 14.974 | 6.694  | 0.134                                                 | 0.402                               | 0.602                               | 0.060                 | 0.000                               | 0.000                               | 0.000                               | 0.00              |
| 09-Dec                       | 11                                           | 4.917  | 11.765 | 5.259  | 0.105                                                 | 0.316                               | 0.473                               | 0.110                 | 0.000                               | 0.000                               | 0.000                               | 0.00              |
| 10-Dec                       | 37                                           | 16.540 | 39.574 | 17.691 | 0.354                                                 | 1.061                               | 1.592                               | 2.860                 | 0.000                               | 0.000                               | 0.000                               | 0.00              |
| 11-Dec                       | 15                                           | 6.706  | 16.043 | 7.172  | 0.143                                                 | 0.430                               | 0.645                               | 0.005                 | 0.000                               | 0.000                               | 0.000                               | 0.00              |
| 12-Dec                       | 21                                           | 9.388  | 22.461 | 10.041 | 0.201                                                 | 0.602                               | 0.904                               | 2.720                 | 0.000                               | 0.000                               | 0.000                               | 0.00              |
| 13-Dec                       | 13                                           | 5.812  | 13.904 | 6.216  | 0.124                                                 | 0.373                               | 0.559                               | 0.300                 | 0.000                               | 0.000                               | 0.000                               | 0.00              |
| 14-Dec                       | 20                                           | 8.941  | 21.391 | 9.563  | 0.191                                                 | 0.574                               | 0.861                               | 1.370                 | 0.000                               | 0.000                               | 0.000                               | 0.00              |
| 15-Dec                       | 26                                           | 11.623 | 27.808 | 12.431 | 0.249                                                 | 0.746                               | 1.119                               | 1.590                 | 0.000                               | 0.000                               | 0.000                               | 0.00              |
| 16-Dec                       | 17                                           | 7.600  | 18.182 | 8.128  | 0.163                                                 | 0.488                               | 0.732                               | 0.000                 | 0.000                               | 0.000                               | 0.000                               | 0.00              |
| 17-Dec                       | 14                                           | 6.259  | 14.974 | 6.694  | 0.134                                                 | 0.402                               | 0.602                               | 0.000                 | 0.000                               | 0.000                               | 0.000                               | 0.00              |
| 18-Dec                       | 13                                           | 5.812  | 13.904 | 6.216  | 0.124                                                 | 0.373                               | 0.559                               | 0.000                 | 0.000                               | 0.000                               | 0.000                               | 0.00              |
| 19-Dec                       | 7                                            | 3.129  | 7.487  | 3.347  | 0.067                                                 | 0.201                               | 0.301                               | 0.000                 | 0.000                               | 0.000                               | 0.000                               | 0.00              |
| 20-Dec                       | 13                                           | 5.812  | 13.904 | 6.216  | 0.124                                                 | 0.373                               | 0.559                               | 0.000                 | 0.000                               | 0.000                               | 0.000                               | 0.00              |
| 21-Dec                       | 14                                           | 6.259  | 14.974 | 6.694  | 0.134                                                 | 0.402                               | 0.602                               | 0.000                 | 0.000                               | 0.000                               | 0.000                               | 0.00              |
| 22-Dec                       | 16                                           | 7.153  | 17.113 | 7.650  | 0.153                                                 | 0.459                               | 0.689                               | 0.010                 | 0.000                               | 0.000                               | 0.000                               | 0.00              |
| 23-Dec                       | 13                                           | 5.812  | 13.904 | 6.216  | 0.124                                                 | 0.373                               | 0.559                               | 0.030                 | 0.000                               | 0.000                               | 0.000                               | 0.00              |
| 24-Dec                       | 15                                           | 6.706  | 16.043 | 7.172  | 0.143                                                 | 0.430                               | 0.645                               | 0.190                 | 0.000                               | 0.000                               | 0.000                               | 0.00              |
| 25-Dec                       | 14                                           | 6.259  | 14.974 | 6.694  | 0.134                                                 | 0.402                               | 0.602                               | 0.090                 | 0.000                               | 0.000                               | 0.000                               | 0.00              |
| 26-Dec                       | 13                                           | 5.812  | 13.904 | 6.216  | 0.124                                                 | 0.373                               | 0.559                               | 0.170                 | 0.000                               | 0.000                               | 0.000                               | 0.00              |
| 27-Dec                       | 25                                           | 11.176 | 26.739 | 11.953 | 0.239                                                 | 0.717                               | 1.076                               | 0.040                 | 0.000                               | 0.000                               | 0.000                               | 0.00              |
| 28-Dec                       | 13                                           | 5.812  | 13.904 | 6.216  | 0.124                                                 | 0.373                               | 0.559                               | 0.000                 | 0.000                               | 0.000                               | 0.000                               | 0.00              |
| 29-Dec                       | 26                                           | 11.623 | 27.808 | 12.431 | 0.249                                                 | 0.746                               | 1.119                               | 0.030                 | 0.000                               | 0.000                               | 0.000                               | 0.00              |
| 30-Dec                       | 26                                           | 11.623 | 27.808 | 12.431 | 0.249                                                 | 0.746                               | 1.119                               | 0.000                 | 0.000                               | 0.000                               | 3.790                               | 30.74             |
| 31-Dec                       | 25                                           | 11.176 | 26.739 | 11.953 | 0.239                                                 | 0.717                               | 1.076                               | 0.000                 | 0.000                               | 0.000                               | 2.228                               | 18.07             |
| Totals:                      |                                              |        |        |        |                                                       |                                     |                                     | 0.00                  | 0.00                                | 43.59                               | 353.62                              |                   |
| Worst Case Day               |                                              |        |        |        |                                                       |                                     |                                     | 0.000                 | 0.000                               | 7.557                               |                                     |                   |

**Storage Pile Calculations**

Control Efficiency 90.00%  
 Rain Days (>0.01") 120 AP42, Section 13.2.2  
 Storage Pile Surface Area 26304.59  
 Uncontrolled (TPY) 0.18  
 Controlled (TPY) 0.02  
 Worst Case Day (lb/24) 6 PM10 - AP42 Section 13.2.5  
 Worst Case Day (gps) 0.032 Per AP42, Section 13.2.5  
 #Days Winds > 12 MPH 343  
 #Days Rain > 0.01 " 130  
 Worst Case Day (gps) 0.024 Per EPA Background Document

**FOSTER WHEELER ENVIRONMENTAL CORPORATION  
CALCULATION SHEET - EXCEL 5.0**

**By:** E. Deken, PE  
**Date:** 10/23/98  
**Ck'd By:** Darrel J. Graziani, P.E.  
**Date:** 11/07/98

**Cal. No.:** 981023ED01  
**Rev. No.:** SJRPP 2  
**OFS:** 7830.0020.0054

**Project:** JEA St. Johns Power Park

**Subject:** Fugitive Emission Estimates - Wind Erosion Limestone Storage Pile - Fuel Yard

**Assumptions:**

1. The threshold friction velocity was selected based on data available in AP-42, Section 13.2.5.
2. Roughness height was estimated based on largest values listed in AP-42, Section 13.2.5
3. Pile is always at maximum capacity which is maximizing emissions.

**References:**

1. AP-42, Section 13.2.5, Industrial Wind Erosion
2. 1997 Local Climatological Data, NOAA, National Climatic Data Center

**Erosion Potential Calculations**

Threshold Friction Velocity: 1

Roughness Height (m) 0.005

| Number<br>of<br>Disturbances | Fastest Mile Values<br>Anemometer Height (m) |        |        |        | Equivalent Friction Velocities<br>u*=0.1u* |             |             | Rain Fall<br>(inches) | Erosion Potential<br>(g/m^2) |             |             | Emissions<br>(lb) |
|------------------------------|----------------------------------------------|--------|--------|--------|--------------------------------------------|-------------|-------------|-----------------------|------------------------------|-------------|-------------|-------------------|
|                              | 6:1                                          |        | 10     |        | u*/u_c:0.2                                 |             |             |                       | 36% Pile                     | 50% Pile    | 14% Pile    |                   |
|                              | (mph)                                        | (m/s)  | (mph)  | (m/s)  | u_c/u_c:0.2                                | u_c/u_c:0.6 | u_c/u_c:0.9 |                       | u_c/u_c:0.2                  | u_c/u_c:0.6 | u_c/u_c:0.9 |                   |
| 01-Jan                       | 15                                           | 6.706  | 16.043 | 7.172  | 0.143                                      | 0.430       | 0.645       | 0.000                 | 0.000                        | 0.000       | 0.000       | 0.00              |
| 02-Jan                       | 14                                           | 6.259  | 14.974 | 6.694  | 0.134                                      | 0.402       | 0.602       | 0.000                 | 0.000                        | 0.000       | 0.000       | 0.00              |
| 03-Jan                       | 16                                           | 7.153  | 17.113 | 7.650  | 0.153                                      | 0.459       | 0.689       | 0.000                 | 0.000                        | 0.000       | 0.000       | 0.00              |
| 04-Jan                       | 15                                           | 6.706  | 16.043 | 7.172  | 0.143                                      | 0.430       | 0.645       | 0.000                 | 0.000                        | 0.000       | 0.000       | 0.00              |
| 05-Jan                       | 22                                           | 9.835  | 23.530 | 10.519 | 0.210                                      | 0.631       | 0.947       | 0.120                 | 0.000                        | 0.000       | 0.000       | 0.00              |
| 06-Jan                       | 9                                            | 4.023  | 9.626  | 4.303  | 0.086                                      | 0.258       | 0.387       | 0.280                 | 0.000                        | 0.000       | 0.000       | 0.00              |
| 07-Jan                       | 14                                           | 6.259  | 14.974 | 6.694  | 0.134                                      | 0.402       | 0.602       | 0.030                 | 0.000                        | 0.000       | 0.000       | 0.00              |
| 08-Jan                       | 17                                           | 7.600  | 18.182 | 8.128  | 0.163                                      | 0.488       | 0.732       | 0.040                 | 0.000                        | 0.000       | 0.000       | 0.00              |
| 09-Jan                       | 20                                           | 8.941  | 21.391 | 9.563  | 0.191                                      | 0.574       | 0.861       | 0.600                 | 0.000                        | 0.000       | 0.000       | 0.00              |
| 10-Jan                       | 26                                           | 11.623 | 27.808 | 12.431 | 0.249                                      | 0.746       | 1.119       | 0.000                 | 0.000                        | 0.000       | 3.790       | 14.19             |
| 11-Jan                       | 14                                           | 6.259  | 14.974 | 6.694  | 0.134                                      | 0.402       | 0.602       | 0.000                 | 0.000                        | 0.000       | 0.000       | 0.00              |
| 12-Jan                       | 10                                           | 4.470  | 10.696 | 4.781  | 0.096                                      | 0.287       | 0.430       | 0.000                 | 0.000                        | 0.000       | 0.000       | 0.00              |
| 13-Jan                       | 15                                           | 6.706  | 16.043 | 7.172  | 0.143                                      | 0.430       | 0.645       | 0.000                 | 0.000                        | 0.000       | 0.000       | 0.00              |
| 14-Jan                       | 20                                           | 8.941  | 21.391 | 9.563  | 0.191                                      | 0.574       | 0.861       | 0.000                 | 0.000                        | 0.000       | 0.000       | 0.00              |
| 15-Jan                       | 16                                           | 7.153  | 17.113 | 7.650  | 0.153                                      | 0.459       | 0.689       | 0.005                 | 0.000                        | 0.000       | 0.000       | 0.00              |
| 16-Jan                       | 23                                           | 10.282 | 24.600 | 10.997 | 0.220                                      | 0.660       | 0.990       | 0.330                 | 0.000                        | 0.000       | 0.000       | 0.00              |
| 17-Jan                       | 24                                           | 10.729 | 25.669 | 11.475 | 0.230                                      | 0.689       | 1.033       | 0.000                 | 0.000                        | 0.000       | 0.881       | 3.30              |
| 18-Jan                       | 21                                           | 9.388  | 22.461 | 10.041 | 0.201                                      | 0.602       | 0.904       | 0.000                 | 0.000                        | 0.000       | 0.000       | 0.00              |
| 19-Jan                       | 17                                           | 7.600  | 18.182 | 8.128  | 0.163                                      | 0.488       | 0.732       | 0.000                 | 0.000                        | 0.000       | 0.000       | 0.00              |
| 20-Jan                       | 15                                           | 6.706  | 16.043 | 7.172  | 0.143                                      | 0.430       | 0.645       | 0.000                 | 0.000                        | 0.000       | 0.000       | 0.00              |
| 21-Jan                       | 16                                           | 7.153  | 17.113 | 7.650  | 0.153                                      | 0.459       | 0.689       | 0.000                 | 0.000                        | 0.000       | 0.000       | 0.00              |
| 22-Jan                       | 22                                           | 9.835  | 23.530 | 10.519 | 0.210                                      | 0.631       | 0.947       | 0.000                 | 0.000                        | 0.000       | 0.000       | 0.00              |
| 23-Jan                       | 15                                           | 6.706  | 16.043 | 7.172  | 0.143                                      | 0.430       | 0.645       | 0.005                 | 0.000                        | 0.000       | 0.000       | 0.00              |
| 24-Jan                       | 18                                           | 8.047  | 19.252 | 8.606  | 0.172                                      | 0.516       | 0.775       | 0.000                 | 0.000                        | 0.000       | 0.000       | 0.00              |
| 25-Jan                       | 18                                           | 8.047  | 19.252 | 8.606  | 0.172                                      | 0.516       | 0.775       | 1.200                 | 0.000                        | 0.000       | 0.000       | 0.00              |
| 26-Jan                       | 17                                           | 7.600  | 18.182 | 8.128  | 0.163                                      | 0.488       | 0.732       | 0.000                 | 0.000                        | 0.000       | 0.000       | 0.00              |
| 27-Jan                       | 18                                           | 8.047  | 19.252 | 8.606  | 0.172                                      | 0.516       | 0.775       | 0.000                 | 0.000                        | 0.000       | 0.000       | 0.00              |
| 28-Jan                       | 17                                           | 7.600  | 18.182 | 8.128  | 0.163                                      | 0.488       | 0.732       | 0.000                 | 0.000                        | 0.000       | 0.000       | 0.00              |
| 29-Jan                       | 22                                           | 9.835  | 23.530 | 10.519 | 0.210                                      | 0.631       | 0.947       | 0.000                 | 0.000                        | 0.000       | 0.000       | 0.00              |
| 30-Jan                       | 15                                           | 6.706  | 16.043 | 7.172  | 0.143                                      | 0.430       | 0.645       | 0.310                 | 0.000                        | 0.000       | 0.000       | 0.00              |
| 31-Jan                       | 15                                           | 6.706  | 16.043 | 7.172  | 0.143                                      | 0.430       | 0.645       | 0.000                 | 0.000                        | 0.000       | 0.000       | 0.00              |
| 01-Feb                       | 21                                           | 9.388  | 22.461 | 10.041 | 0.201                                      | 0.602       | 0.904       | 0.000                 | 0.000                        | 0.000       | 0.000       | 0.00              |
| 02-Feb                       | 10                                           | 4.470  | 10.696 | 4.781  | 0.096                                      | 0.287       | 0.430       | 0.000                 | 0.000                        | 0.000       | 0.000       | 0.00              |
| 03-Feb                       | 13                                           | 5.812  | 13.904 | 6.216  | 0.124                                      | 0.373       | 0.559       | 0.000                 | 0.000                        | 0.000       | 0.000       | 0.00              |
| 04-Feb                       | 15                                           | 6.706  | 16.043 | 7.172  | 0.143                                      | 0.430       | 0.645       | 0.000                 | 0.000                        | 0.000       | 0.000       | 0.00              |
| 05-Feb                       | 17                                           | 7.600  | 18.182 | 8.128  | 0.163                                      | 0.488       | 0.732       | 0.000                 | 0.000                        | 0.000       | 0.000       | 0.00              |
| 06-Feb                       | 14                                           | 6.259  | 14.974 | 6.694  | 0.134                                      | 0.402       | 0.602       | 0.000                 | 0.000                        | 0.000       | 0.000       | 0.00              |
| 07-Feb                       | 11                                           | 4.917  | 11.765 | 5.259  | 0.105                                      | 0.316       | 0.473       | 0.000                 | 0.000                        | 0.000       | 0.000       | 0.00              |
| 08-Feb                       | 21                                           | 9.388  | 22.461 | 10.041 | 0.201                                      | 0.602       | 0.904       | 0.030                 | 0.000                        | 0.000       | 0.000       | 0.00              |
| 09-Feb                       | 16                                           | 7.153  | 17.113 | 7.650  | 0.153                                      | 0.459       | 0.689       | 0.005                 | 0.000                        | 0.000       | 0.000       | 0.00              |
| 10-Feb                       | 11                                           | 4.917  | 11.765 | 5.259  | 0.105                                      | 0.316       | 0.473       | 0.005                 | 0.000                        | 0.000       | 0.000       | 0.00              |
| 11-Feb                       | 10                                           | 4.470  | 10.696 | 4.781  | 0.096                                      | 0.287       | 0.430       | 0.000                 | 0.000                        | 0.000       | 0.000       | 0.00              |
| 12-Feb                       | 14                                           | 6.259  | 14.974 | 6.694  | 0.134                                      | 0.402       | 0.602       | 0.000                 | 0.000                        | 0.000       | 0.000       | 0.00              |
| 13-Feb                       | 18                                           | 8.047  | 19.252 | 8.606  | 0.172                                      | 0.516       | 0.775       | 0.130                 | 0.000                        | 0.000       | 0.000       | 0.00              |
| 14-Feb                       | 18                                           | 8.047  | 19.252 | 8.606  | 0.172                                      | 0.516       | 0.775       | 0.040                 | 0.000                        | 0.000       | 0.000       | 0.00              |
| 15-Feb                       | 18                                           | 8.047  | 19.252 | 8.606  | 0.172                                      | 0.516       | 0.775       | 0.400                 | 0.000                        | 0.000       | 0.000       | 0.00              |
| 16-Feb                       | 15                                           | 6.706  | 16.043 | 7.172  | 0.143                                      | 0.430       | 0.645       | 0.000                 | 0.000                        | 0.000       | 0.000       | 0.00              |
| 17-Feb                       | 20                                           | 8.941  | 21.391 | 9.563  | 0.191                                      | 0.574       | 0.861       | 0.000                 | 0.000                        | 0.000       | 0.000       | 0.00              |
| 18-Feb                       | 16                                           | 7.153  | 17.113 | 7.650  | 0.153                                      | 0.459       | 0.689       | 0.000                 | 0.000                        | 0.000       | 0.000       | 0.00              |
| 19-Feb                       | 14                                           | 6.259  | 14.974 | 6.694  | 0.134                                      | 0.402       | 0.602       | 0.005                 | 0.000                        | 0.000       | 0.000       | 0.00              |
| 20-Feb                       | 20                                           | 8.941  | 21.391 | 9.563  | 0.191                                      | 0.574       | 0.861       | 0.000                 | 0.000                        | 0.000       | 0.000       | 0.00              |
| 21-Feb                       | 24                                           | 10.729 | 25.669 | 11.475 | 0.230                                      | 0.689       | 1.033       | 0.000                 | 0.000                        | 0.000       | 0.881       | 3.30              |
| 22-Feb                       | 17                                           | 7.600  | 18.182 | 8.128  | 0.163                                      | 0.488       | 0.732       | 0.310                 | 0.000                        | 0.000       | 0.000       | 0.00              |
| 23-Feb                       | 18                                           | 8.047  | 19.252 | 8.606  | 0.172                                      | 0.516       | 0.775       | 0.005                 | 0.000                        | 0.000       | 0.000       | 0.00              |
| 24-Feb                       | 18                                           | 8.047  | 19.252 | 8.606  | 0.172                                      | 0.516       | 0.775       | 0.140                 | 0.000                        | 0.000       | 0.000       | 0.00              |

**FOSTER WHEELER ENVIRONMENTAL CORPORATION**  
**CALCULATION SHEET - EXCEL 5.0**

**By: E. Deken, PE**  
**Date: 10/23/98**  
**Ch'd By: Darrel J. Graziani, P.E.**  
**Date: 11/07/98**

**Cal. No.: 981023ED01**  
**Rev. No.: SJRPP 2**  
**OFS: 7830.0020.0054**

**Project: JEA St. Johns Power Park**

**Subject: Fugitive Emission Estimates - Wind Erosion Limestone Storage Pile - Fuel Yard**

**Assumptions:**

1. The threshold friction velocity was selected based on data available in AP-42, Section 13.2.5.
2. Roughness height was estimated based on largest values listed in AP-42, Section 13.2.5
3. Pile is always at maximum capacity which is maximizing emissions.

**References:**

1. AP-42, Section 13.2.5, Industrial Wind Erosion
2. 1997 Local Climatological Data, NOAA, National Climatic Data Center

**Erosion Potential Calculations**

Threshold Friction Velocity: **1**

Roughness Height (m) **0.005**

| Number<br>of<br>Disturbances | Fastest Mile Values   |        |        |        | Equivalent Friction Velocities      |                                     |                                     | Rain Fall<br>(Inches) | Erosion Potential                   |                                     |                                     | Emissions<br>(lb) |
|------------------------------|-----------------------|--------|--------|--------|-------------------------------------|-------------------------------------|-------------------------------------|-----------------------|-------------------------------------|-------------------------------------|-------------------------------------|-------------------|
|                              | Anemometer Height (m) |        |        |        | u* = 0.1u*                          |                                     |                                     |                       | (g/m^2)                             |                                     |                                     |                   |
|                              | 6.1                   |        | 10     |        | (m/s)                               |                                     |                                     |                       | 36% Pile                            | 50% Pile                            | 14% Pile                            |                   |
|                              | (mph)                 | (m/s)  | (mph)  | (m/s)  | u <sub>a</sub> /u <sub>t</sub> :0.2 | u <sub>a</sub> /u <sub>t</sub> :0.6 | u <sub>a</sub> /u <sub>t</sub> :0.9 |                       | u <sub>a</sub> /u <sub>t</sub> :0.2 | u <sub>a</sub> /u <sub>t</sub> :0.6 | u <sub>a</sub> /u <sub>t</sub> :0.9 |                   |
| 25-Feb                       | 21                    | 9.388  | 22.461 | 10.041 | 0.201                               | 0.602                               | 0.904                               | 0.230                 | 0.000                               | 0.000                               | 0.000                               | 0.00              |
| 26-Feb                       | 15                    | 6.706  | 16.043 | 7.172  | 0.143                               | 0.430                               | 0.645                               | 0.000                 | 0.000                               | 0.000                               | 0.000                               | 0.00              |
| 27-Feb                       | 20                    | 8.941  | 21.391 | 9.563  | 0.191                               | 0.574                               | 0.861                               | 0.000                 | 0.000                               | 0.000                               | 0.000                               | 0.00              |
| 28-Feb                       | 20                    | 8.941  | 21.391 | 9.563  | 0.191                               | 0.574                               | 0.861                               | 0.000                 | 0.000                               | 0.000                               | 0.000                               | 0.00              |
| 01-Mar                       | 20                    | 8.941  | 21.391 | 9.563  | 0.191                               | 0.574                               | 0.861                               | 0.000                 | 0.000                               | 0.000                               | 0.000                               | 0.00              |
| 02-Mar                       | 15                    | 6.706  | 16.043 | 7.172  | 0.143                               | 0.430                               | 0.645                               | 0.000                 | 0.000                               | 0.000                               | 0.000                               | 0.00              |
| 03-Mar                       | 22                    | 9.835  | 23.530 | 10.519 | 0.210                               | 0.631                               | 0.947                               | 0.000                 | 0.000                               | 0.000                               | 0.000                               | 0.00              |
| 04-Mar                       | 17                    | 7.600  | 18.182 | 8.128  | 0.163                               | 0.488                               | 0.732                               | 0.000                 | 0.000                               | 0.000                               | 0.000                               | 0.00              |
| 05-Mar                       | 11                    | 4.917  | 11.765 | 5.259  | 0.105                               | 0.316                               | 0.473                               | 0.000                 | 0.000                               | 0.000                               | 0.000                               | 0.00              |
| 06-Mar                       | 24                    | 10.729 | 25.669 | 11.475 | 0.230                               | 0.689                               | 1.033                               | 0.005                 | 0.000                               | 0.000                               | 0.881                               | 3.30              |
| 07-Mar                       | 18                    | 8.047  | 19.252 | 8.606  | 0.172                               | 0.516                               | 0.775                               | 0.000                 | 0.000                               | 0.000                               | 0.000                               | 0.00              |
| 08-Mar                       | 14                    | 6.259  | 14.974 | 6.694  | 0.134                               | 0.402                               | 0.602                               | 0.000                 | 0.000                               | 0.000                               | 0.000                               | 0.00              |
| 09-Mar                       | 20                    | 8.941  | 21.391 | 9.563  | 0.191                               | 0.574                               | 0.861                               | 0.000                 | 0.000                               | 0.000                               | 0.000                               | 0.00              |
| 10-Mar                       | 16                    | 7.153  | 17.113 | 7.650  | 0.153                               | 0.459                               | 0.689                               | 0.000                 | 0.000                               | 0.000                               | 0.000                               | 0.00              |
| 11-Mar                       | 17                    | 7.600  | 18.182 | 8.128  | 0.163                               | 0.488                               | 0.732                               | 0.005                 | 0.000                               | 0.000                               | 0.000                               | 0.00              |
| 12-Mar                       | 20                    | 8.941  | 21.391 | 9.563  | 0.191                               | 0.574                               | 0.861                               | 0.000                 | 0.000                               | 0.000                               | 0.000                               | 0.00              |
| 13-Mar                       | 29                    | 12.964 | 31.017 | 13.866 | 0.277                               | 0.832                               | 1.248                               | 0.170                 | 0.000                               | 0.000                               | 0.000                               | 0.00              |
| 14-Mar                       | 18                    | 8.047  | 19.252 | 8.606  | 0.172                               | 0.516                               | 0.775                               | 0.390                 | 0.000                               | 0.000                               | 0.000                               | 0.00              |
| 15-Mar                       | 15                    | 6.706  | 16.043 | 7.172  | 0.143                               | 0.430                               | 0.645                               | 0.000                 | 0.000                               | 0.000                               | 0.000                               | 0.00              |
| 16-Mar                       | 20                    | 8.941  | 21.391 | 9.563  | 0.191                               | 0.574                               | 0.861                               | 0.000                 | 0.000                               | 0.000                               | 0.000                               | 0.00              |
| 17-Mar                       | 18                    | 8.047  | 19.252 | 8.606  | 0.172                               | 0.516                               | 0.775                               | 0.000                 | 0.000                               | 0.000                               | 0.000                               | 0.00              |
| 18-Mar                       | 15                    | 6.706  | 16.043 | 7.172  | 0.143                               | 0.430                               | 0.645                               | 0.005                 | 0.000                               | 0.000                               | 0.000                               | 0.00              |
| 19-Mar                       | 18                    | 8.047  | 19.252 | 8.606  | 0.172                               | 0.516                               | 0.775                               | 0.000                 | 0.000                               | 0.000                               | 0.000                               | 0.00              |
| 20-Mar                       | 13                    | 5.812  | 13.904 | 6.216  | 0.124                               | 0.373                               | 0.559                               | 0.030                 | 0.000                               | 0.000                               | 0.000                               | 0.00              |
| 21-Mar                       | 14                    | 6.259  | 14.974 | 6.694  | 0.134                               | 0.402                               | 0.602                               | 0.470                 | 0.000                               | 0.000                               | 0.000                               | 0.00              |
| 22-Mar                       | 21                    | 9.388  | 22.461 | 10.041 | 0.201                               | 0.602                               | 0.904                               | 0.000                 | 0.000                               | 0.000                               | 0.000                               | 0.00              |
| 23-Mar                       | 17                    | 7.600  | 18.182 | 8.128  | 0.163                               | 0.488                               | 0.732                               | 0.000                 | 0.000                               | 0.000                               | 0.000                               | 0.00              |
| 24-Mar                       | 25                    | 11.176 | 26.739 | 11.953 | 0.239                               | 0.717                               | 1.076                               | 0.005                 | 0.000                               | 0.000                               | 2.228                               | 8.34              |
| 25-Mar                       | 24                    | 10.729 | 25.669 | 11.475 | 0.230                               | 0.689                               | 1.033                               | 0.490                 | 0.000                               | 0.000                               | 0.000                               | 0.00              |
| 26-Mar                       | 17                    | 7.600  | 18.182 | 8.128  | 0.163                               | 0.488                               | 0.732                               | 0.020                 | 0.000                               | 0.000                               | 0.000                               | 0.00              |
| 27-Mar                       | 13                    | 5.812  | 13.904 | 6.216  | 0.124                               | 0.373                               | 0.559                               | 0.000                 | 0.000                               | 0.000                               | 0.000                               | 0.00              |
| 28-Mar                       | 17                    | 7.600  | 18.182 | 8.128  | 0.163                               | 0.488                               | 0.732                               | 0.000                 | 0.000                               | 0.000                               | 0.000                               | 0.00              |
| 29-Mar                       | 22                    | 9.835  | 23.530 | 10.519 | 0.210                               | 0.631                               | 0.947                               | 0.005                 | 0.000                               | 0.000                               | 0.000                               | 0.00              |
| 30-Mar                       | 30                    | 13.411 | 32.087 | 14.344 | 0.287                               | 0.861                               | 1.291                               | 0.270                 | 0.000                               | 0.000                               | 0.000                               | 0.00              |
| 31-Mar                       | 25                    | 11.176 | 26.739 | 11.953 | 0.239                               | 0.717                               | 1.076                               | 0.005                 | 0.000                               | 0.000                               | 2.228                               | 8.34              |
| 01-Apr                       | 15                    | 6.706  | 16.043 | 7.172  | 0.143                               | 0.430                               | 0.645                               | 0.000                 | 0.000                               | 0.000                               | 0.000                               | 0.00              |
| 02-Apr                       | 21                    | 9.388  | 22.461 | 10.041 | 0.201                               | 0.602                               | 0.904                               | 0.000                 | 0.000                               | 0.000                               | 0.000                               | 0.00              |
| 03-Apr                       | 16                    | 7.153  | 17.113 | 7.650  | 0.153                               | 0.459                               | 0.689                               | 0.000                 | 0.000                               | 0.000                               | 0.000                               | 0.00              |
| 04-Apr                       | 16                    | 7.153  | 17.113 | 7.650  | 0.153                               | 0.459                               | 0.689                               | 0.000                 | 0.000                               | 0.000                               | 0.000                               | 0.00              |
| 05-Apr                       | 21                    | 9.388  | 22.461 | 10.041 | 0.201                               | 0.602                               | 0.904                               | 0.000                 | 0.000                               | 0.000                               | 0.000                               | 0.00              |
| 06-Apr                       | 17                    | 7.600  | 18.182 | 8.128  | 0.163                               | 0.488                               | 0.732                               | 0.005                 | 0.000                               | 0.000                               | 0.000                               | 0.00              |
| 07-Apr                       | 18                    | 8.047  | 19.252 | 8.606  | 0.172                               | 0.516                               | 0.775                               | 0.000                 | 0.000                               | 0.000                               | 0.000                               | 0.00              |
| 08-Apr                       | 21                    | 9.388  | 22.461 | 10.041 | 0.201                               | 0.602                               | 0.904                               | 0.000                 | 0.000                               | 0.000                               | 0.000                               | 0.00              |
| 09-Apr                       | 15                    | 6.706  | 16.043 | 7.172  | 0.143                               | 0.430                               | 0.645                               | 0.000                 | 0.000                               | 0.000                               | 0.000                               | 0.00              |
| 10-Apr                       | 21                    | 9.388  | 22.461 | 10.041 | 0.201                               | 0.602                               | 0.904                               | 0.000                 | 0.000                               | 0.000                               | 0.000                               | 0.00              |
| 11-Apr                       | 21                    | 9.388  | 22.461 | 10.041 | 0.201                               | 0.602                               | 0.904                               | 0.005                 | 0.000                               | 0.000                               | 0.000                               | 0.00              |
| 12-Apr                       | 22                    | 9.835  | 23.530 | 10.519 | 0.210                               | 0.631                               | 0.947                               | 0.050                 | 0.000                               | 0.000                               | 0.000                               | 0.00              |
| 13-Apr                       | 16                    | 7.153  | 17.113 | 7.650  | 0.153                               | 0.459                               | 0.689                               | 0.000                 | 0.000                               | 0.000                               | 0.000                               | 0.00              |
| 14-Apr                       | 14                    | 6.259  | 14.974 | 6.694  | 0.134                               | 0.402                               | 0.602                               | 0.550                 | 0.000                               | 0.000                               | 0.000                               | 0.00              |
| 15-Apr                       | 20                    | 8.941  | 21.391 | 9.563  | 0.191                               | 0.574                               | 0.861                               | 0.160                 | 0.000                               | 0.000                               | 0.000                               | 0.00              |
| 16-Apr                       | 16                    | 7.153  | 17.113 | 7.650  | 0.153                               | 0.459                               | 0.689                               | 0.000                 | 0.000                               | 0.000                               | 0.000                               | 0.00              |
| 17-Apr                       | 24                    | 10.729 | 25.669 | 11.475 | 0.230                               | 0.689                               | 1.033                               | 0.000                 | 0.000                               | 0.000                               | 0.881                               | 3.30              |
| 18-Apr                       | 20                    | 8.941  | 21.391 | 9.563  | 0.191                               | 0.574                               | 0.861                               | 0.000                 | 0.000                               | 0.000                               | 0.000                               | 0.00              |
| 19-Apr                       | 20                    | 8.941  | 21.391 | 9.563  | 0.191                               | 0.574                               | 0.861                               | 0.000                 | 0.000                               | 0.000                               | 0.000                               | 0.00              |
| 20-Apr                       | 18                    | 8.047  | 19.252 | 8.606  | 0.172                               | 0.516                               | 0.775                               | 0.000                 | 0.000                               | 0.000                               | 0.000                               | 0.00              |



**FOSTER WHEELER ENVIRONMENTAL CORPORATION**  
**CALCULATION SHEET - EXCEL 5.0**

**By:** E. Deken, PE  
**Date:** 10/23/98  
**Ch'd By:** Darrel J. Graziani, P.E.  
**Date:** 11/07/98

**Cal. No.:** 981023ED01  
**Rev. No.:** SJRPP 2  
**OFS:** 7830.0020.0054

**Project:** JEA St. Johns Power Park

**Subject:** Fugitive Emission Estimates - Wind Erosion Limestone Storage Pile - Fuel Yard

**Assumptions:**

1. The threshold friction velocity was selected based on data available in AP-42, Section 13.2.5.
2. Roughness height was estimated based on largest values listed in AP-42, Section 13.2.5
3. Pile is always at maximum capacity which is maximizing emissions.

**References:**

1. AP-42, Section 13.2.5, Industrial Wind Erosion
2. 1997 Local Climatological Data, NOAA, National Climatic Data Center

**Erosion Potential Calculations**

Threshold Friction Velocity: **1**

Roughness Height (m) **0.005**

| Number<br>of<br>Disturbances | Fastest Mile Values   |        |        |        | Equivalent Friction Velocities |                |                | Rain Fall<br>(inches) | Erosion Potential          |                            |                            | Emissions<br>(lb) |
|------------------------------|-----------------------|--------|--------|--------|--------------------------------|----------------|----------------|-----------------------|----------------------------|----------------------------|----------------------------|-------------------|
|                              | Anemometer Height (m) |        |        |        | $u^* = 0.1u^*$<br>(m/s)        |                |                |                       | (g/m^2)                    |                            |                            |                   |
|                              | 6.1                   |        | 10     |        | $u_a/u_{*0.2}$                 | $u_a/u_{*0.6}$ | $u_a/u_{*0.9}$ |                       | 36% Pile<br>$u_a/u_{*0.2}$ | 50% Pile<br>$u_a/u_{*0.6}$ | 14% Pile<br>$u_a/u_{*0.9}$ |                   |
|                              | (mph)                 | (m/s)  | (mph)  | (m/s)  |                                |                |                |                       |                            |                            |                            |                   |
| 21-Apr                       | 20                    | 8.941  | 21.391 | 9.563  | 0.191                          | 0.574          | 0.861          | 0.000                 | 0.000                      | 0.000                      | 0.000                      | 0.00              |
| 22-Apr                       | 23                    | 10.282 | 24.600 | 10.997 | 0.220                          | 0.660          | 0.990          | 0.010                 | 0.000                      | 0.000                      | 0.000                      | 0.00              |
| 23-Apr                       | 43                    | 19.223 | 45.991 | 20.560 | 0.411                          | 1.234          | 1.850          | 1.150                 | 0.000                      | 0.000                      | 0.000                      | 0.00              |
| 24-Apr                       | 17                    | 7.600  | 18.182 | 8.128  | 0.163                          | 0.488          | 0.732          | 0.000                 | 0.000                      | 0.000                      | 0.000                      | 0.00              |
| 25-Apr                       | 16                    | 7.153  | 17.113 | 7.650  | 0.153                          | 0.459          | 0.689          | 0.000                 | 0.000                      | 0.000                      | 0.000                      | 0.00              |
| 26-Apr                       | 21                    | 9.388  | 22.461 | 10.041 | 0.201                          | 0.602          | 0.904          | 0.049                 | 0.000                      | 0.000                      | 0.000                      | 0.00              |
| 27-Apr                       | 21                    | 9.388  | 22.461 | 10.041 | 0.201                          | 0.602          | 0.904          | 1.810                 | 0.000                      | 0.000                      | 0.000                      | 0.00              |
| 28-Apr                       | 32                    | 14.305 | 34.226 | 15.300 | 0.306                          | 0.918          | 1.377          | 0.340                 | 0.000                      | 0.000                      | 0.000                      | 0.00              |
| 29-Apr                       | 22                    | 9.835  | 23.530 | 10.519 | 0.210                          | 0.631          | 0.947          | 0.000                 | 0.000                      | 0.000                      | 0.000                      | 0.00              |
| 30-Apr                       | 14                    | 6.259  | 14.974 | 6.694  | 0.134                          | 0.402          | 0.602          | 0.000                 | 0.000                      | 0.000                      | 0.000                      | 0.00              |
| 01-May                       | 18                    | 8.047  | 19.252 | 8.606  | 0.172                          | 0.516          | 0.775          | 0.000                 | 0.000                      | 0.000                      | 0.000                      | 0.00              |
| 02-May                       | 15                    | 6.706  | 16.043 | 7.172  | 0.143                          | 0.430          | 0.645          | 0.000                 | 0.000                      | 0.000                      | 0.000                      | 0.00              |
| 03-May                       | 31                    | 13.858 | 33.156 | 14.822 | 0.296                          | 0.889          | 1.334          | 0.020                 | 0.000                      | 0.000                      | 0.000                      | 0.00              |
| 04-May                       | 16                    | 7.153  | 17.113 | 7.650  | 0.153                          | 0.459          | 0.689          | 0.000                 | 0.000                      | 0.000                      | 0.000                      | 0.00              |
| 05-May                       | 16                    | 7.153  | 17.113 | 7.650  | 0.153                          | 0.459          | 0.689          | 0.000                 | 0.000                      | 0.000                      | 0.000                      | 0.00              |
| 06-May                       | 15                    | 6.706  | 16.043 | 7.172  | 0.143                          | 0.430          | 0.645          | 0.000                 | 0.000                      | 0.000                      | 0.000                      | 0.00              |
| 07-May                       | 18                    | 8.047  | 19.252 | 8.606  | 0.172                          | 0.516          | 0.775          | 0.000                 | 0.000                      | 0.000                      | 0.000                      | 0.00              |
| 08-May                       | 14                    | 6.259  | 14.974 | 6.694  | 0.134                          | 0.402          | 0.602          | 0.000                 | 0.000                      | 0.000                      | 0.000                      | 0.00              |
| 09-May                       | 26                    | 11.623 | 27.808 | 12.431 | 0.249                          | 0.746          | 1.119          | 0.000                 | 0.000                      | 0.000                      | 3.790                      | 14.19             |
| 10-May                       | 16                    | 7.153  | 17.113 | 7.650  | 0.153                          | 0.459          | 0.689          | 0.000                 | 0.000                      | 0.000                      | 0.000                      | 0.00              |
| 11-May                       | 17                    | 7.600  | 18.182 | 8.128  | 0.163                          | 0.488          | 0.732          | 0.000                 | 0.000                      | 0.000                      | 0.000                      | 0.00              |
| 12-May                       | 14                    | 6.259  | 14.974 | 6.694  | 0.134                          | 0.402          | 0.602          | 0.780                 | 0.000                      | 0.000                      | 0.000                      | 0.00              |
| 13-May                       | 17                    | 7.600  | 18.182 | 8.128  | 0.163                          | 0.488          | 0.732          | 0.000                 | 0.000                      | 0.000                      | 0.000                      | 0.00              |
| 14-May                       | 14                    | 6.259  | 14.974 | 6.694  | 0.134                          | 0.402          | 0.602          | 0.000                 | 0.000                      | 0.000                      | 0.000                      | 0.00              |
| 15-May                       | 18                    | 8.047  | 19.252 | 8.606  | 0.172                          | 0.516          | 0.775          | 0.005                 | 0.000                      | 0.000                      | 0.000                      | 0.00              |
| 16-May                       | 15                    | 6.706  | 16.043 | 7.172  | 0.143                          | 0.430          | 0.645          | 0.000                 | 0.000                      | 0.000                      | 0.000                      | 0.00              |
| 17-May                       | 13                    | 5.812  | 13.904 | 6.216  | 0.124                          | 0.373          | 0.559          | 0.000                 | 0.000                      | 0.000                      | 0.000                      | 0.00              |
| 18-May                       | 16                    | 7.153  | 17.113 | 7.650  | 0.153                          | 0.459          | 0.689          | 0.000                 | 0.000                      | 0.000                      | 0.000                      | 0.00              |
| 19-May                       | 16                    | 7.153  | 17.113 | 7.650  | 0.153                          | 0.459          | 0.689          | 0.005                 | 0.000                      | 0.000                      | 0.000                      | 0.00              |
| 20-May                       | 16                    | 7.153  | 17.113 | 7.650  | 0.153                          | 0.459          | 0.689          | 0.005                 | 0.000                      | 0.000                      | 0.000                      | 0.00              |
| 21-May                       | 15                    | 6.706  | 16.043 | 7.172  | 0.143                          | 0.430          | 0.645          | 0.000                 | 0.000                      | 0.000                      | 0.000                      | 0.00              |
| 22-May                       | 20                    | 8.941  | 21.391 | 9.563  | 0.191                          | 0.574          | 0.861          | 0.000                 | 0.000                      | 0.000                      | 0.000                      | 0.00              |
| 23-May                       | 20                    | 8.941  | 21.391 | 9.563  | 0.191                          | 0.574          | 0.861          | 0.000                 | 0.000                      | 0.000                      | 0.000                      | 0.00              |
| 24-May                       | 18                    | 8.047  | 19.252 | 8.606  | 0.172                          | 0.516          | 0.775          | 0.300                 | 0.000                      | 0.000                      | 0.000                      | 0.00              |
| 25-May                       | 22                    | 9.835  | 23.530 | 10.519 | 0.210                          | 0.631          | 0.947          | 0.550                 | 0.000                      | 0.000                      | 0.000                      | 0.00              |
| 26-May                       | 17                    | 7.600  | 18.182 | 8.128  | 0.163                          | 0.488          | 0.732          | 0.005                 | 0.000                      | 0.000                      | 0.000                      | 0.00              |
| 27-May                       | 26                    | 11.623 | 27.808 | 12.431 | 0.249                          | 0.746          | 1.119          | 1.270                 | 0.000                      | 0.000                      | 0.000                      | 0.00              |
| 28-May                       | 22                    | 9.835  | 23.530 | 10.519 | 0.210                          | 0.631          | 0.947          | 0.050                 | 0.000                      | 0.000                      | 0.000                      | 0.00              |
| 29-May                       | 21                    | 9.388  | 22.461 | 10.041 | 0.201                          | 0.602          | 0.904          | 0.010                 | 0.000                      | 0.000                      | 0.000                      | 0.00              |
| 30-May                       | 17                    | 7.600  | 18.182 | 8.128  | 0.163                          | 0.488          | 0.732          | 0.000                 | 0.000                      | 0.000                      | 0.000                      | 0.00              |
| 31-May                       | 21                    | 9.388  | 22.461 | 10.041 | 0.201                          | 0.602          | 0.904          | 0.450                 | 0.000                      | 0.000                      | 0.000                      | 0.00              |
| 01-Jun                       | 18                    | 8.047  | 19.252 | 8.606  | 0.172                          | 0.516          | 0.775          | 0.830                 | 0.000                      | 0.000                      | 0.000                      | 0.00              |
| 02-Jun                       | 14                    | 6.259  | 14.974 | 6.694  | 0.134                          | 0.402          | 0.602          | 0.030                 | 0.000                      | 0.000                      | 0.000                      | 0.00              |
| 03-Jun                       | 14                    | 6.259  | 14.974 | 6.694  | 0.134                          | 0.402          | 0.602          | 0.000                 | 0.000                      | 0.000                      | 0.000                      | 0.00              |
| 04-Jun                       | 21                    | 9.388  | 22.461 | 10.041 | 0.201                          | 0.602          | 0.904          | 0.000                 | 0.000                      | 0.000                      | 0.000                      | 0.00              |
| 05-Jun                       | 22                    | 9.835  | 23.530 | 10.519 | 0.210                          | 0.631          | 0.947          | 0.850                 | 0.000                      | 0.000                      | 0.000                      | 0.00              |
| 06-Jun                       | 22                    | 9.835  | 23.530 | 10.519 | 0.210                          | 0.631          | 0.947          | 0.060                 | 0.000                      | 0.000                      | 0.000                      | 0.00              |
| 07-Jun                       | 14                    | 6.259  | 14.974 | 6.694  | 0.134                          | 0.402          | 0.602          | 0.005                 | 0.000                      | 0.000                      | 0.000                      | 0.00              |
| 08-Jun                       | 17                    | 7.600  | 18.182 | 8.128  | 0.163                          | 0.488          | 0.732          | 0.000                 | 0.000                      | 0.000                      | 0.000                      | 0.00              |
| 09-Jun                       | 22                    | 9.835  | 23.530 | 10.519 | 0.210                          | 0.631          | 0.947          | 0.010                 | 0.000                      | 0.000                      | 0.000                      | 0.00              |
| 10-Jun                       | 20                    | 8.941  | 21.391 | 9.563  | 0.191                          | 0.574          | 0.861          | 0.000                 | 0.000                      | 0.000                      | 0.000                      | 0.00              |
| 11-Jun                       | 17                    | 7.600  | 18.182 | 8.128  | 0.163                          | 0.488          | 0.732          | 0.005                 | 0.000                      | 0.000                      | 0.000                      | 0.00              |
| 12-Jun                       | 16                    | 7.153  | 17.113 | 7.650  | 0.153                          | 0.459          | 0.689          | 0.320                 | 0.000                      | 0.000                      | 0.000                      | 0.00              |
| 13-Jun                       | 22                    | 9.835  | 23.530 | 10.519 | 0.210                          | 0.631          | 0.947          | 0.005                 | 0.000                      | 0.000                      | 0.000                      | 0.00              |
| 14-Jun                       | 22                    | 9.835  | 23.530 | 10.519 | 0.210                          | 0.631          | 0.947          | 0.230                 | 0.000                      | 0.000                      | 0.000                      | 0.00              |

**FOSTER WHEELER ENVIRONMENTAL CORPORATION**  
**CALCULATION SHEET - EXCEL 5.0**

**By:** E. Deken, PE  
**Date:** 10/23/98  
**Ch'd By:** Darrel J. Graziani, P.E.  
**Date:** 11/07/98

**Cal. No.:** 981023ED01  
**Rev. No.:** SJRPP 2  
**OFS:** 7830.0020.0054

**Project:** JEA St. Johns Power Park

**Subject:** Fugitive Emission Estimates - Wind Erosion Limestone Storage Pile - Fuel Yard

**Assumptions:**

1. The threshold friction velocity was selected based on data available in AP-42, Section 13.2.5.
2. Roughness height was estimated based on largest values listed in AP-42, Section 13.2.5
3. Pile is always at maximum capacity which is maximizing emissions.

**References:**

1. AP-42, Section 13.2.5, Industrial Wind Erosion
2. 1997 Local Climatological Data, NOAA, National Climatic Data Center

**Erosion Potential Calculations**

Threshold Friction Velocity: **1**  
 Roughness Height (m) **0.005**

| Number<br>of<br>Disturbances | Fastest Mile Values   |        |        |        | Equivalent Friction Velocities      |                                     |                                     | Rain Fall<br>(inches) | Erosion Potential                   |                                     |                                     | Emissions<br>(lb) |
|------------------------------|-----------------------|--------|--------|--------|-------------------------------------|-------------------------------------|-------------------------------------|-----------------------|-------------------------------------|-------------------------------------|-------------------------------------|-------------------|
|                              | Anemometer Height (m) |        |        |        | u*=0.1u*                            |                                     |                                     |                       | (g/m^2)                             |                                     |                                     |                   |
|                              | 6.1                   |        | 10     |        | (m/s)                               |                                     |                                     |                       | 36% Pile                            | 50% Pile                            | 14% Pile                            |                   |
|                              | (mph)                 | (m/s)  | (mph)  | (m/s)  | u <sub>a</sub> /u <sub>t</sub> :0.2 | u <sub>a</sub> /u <sub>t</sub> :0.6 | u <sub>a</sub> /u <sub>t</sub> :0.9 |                       | u <sub>a</sub> /u <sub>t</sub> :0.2 | u <sub>a</sub> /u <sub>t</sub> :0.6 | u <sub>a</sub> /u <sub>t</sub> :0.9 |                   |
| 15-Jun                       | 23                    | 10.282 | 24.600 | 10.997 | 0.220                               | 0.660                               | 0.990                               | 0.080                 | 0.000                               | 0.000                               | 0.000                               | 0.00              |
| 16-Jun                       | 14                    | 6.259  | 14.974 | 6.694  | 0.134                               | 0.402                               | 0.602                               | 0.000                 | 0.000                               | 0.000                               | 0.000                               | 0.00              |
| 17-Jun                       | 29                    | 12.964 | 31.017 | 13.866 | 0.277                               | 0.832                               | 1.248                               | 0.520                 | 0.000                               | 0.000                               | 0.000                               | 0.00              |
| 18-Jun                       | 26                    | 11.623 | 27.808 | 12.431 | 0.249                               | 0.746                               | 1.119                               | 0.080                 | 0.000                               | 0.000                               | 0.000                               | 0.00              |
| 19-Jun                       | 31                    | 13.858 | 33.156 | 14.822 | 0.296                               | 0.889                               | 1.334                               | 0.520                 | 0.000                               | 0.000                               | 0.000                               | 0.00              |
| 20-Jun                       | 25                    | 11.176 | 26.739 | 11.953 | 0.239                               | 0.717                               | 1.076                               | 0.005                 | 0.000                               | 0.000                               | 2.228                               | 8.34              |
| 21-Jun                       | 17                    | 7.600  | 18.182 | 8.128  | 0.163                               | 0.488                               | 0.732                               | 0.000                 | 0.000                               | 0.000                               | 0.000                               | 0.00              |
| 22-Jun                       | 16                    | 7.153  | 17.113 | 7.650  | 0.153                               | 0.459                               | 0.689                               | 0.000                 | 0.000                               | 0.000                               | 0.000                               | 0.00              |
| 23-Jun                       | 14                    | 6.259  | 14.974 | 6.694  | 0.134                               | 0.402                               | 0.602                               | 0.000                 | 0.000                               | 0.000                               | 0.000                               | 0.00              |
| 24-Jun                       | 17                    | 7.600  | 18.182 | 8.128  | 0.163                               | 0.488                               | 0.732                               | 0.000                 | 0.000                               | 0.000                               | 0.000                               | 0.00              |
| 25-Jun                       | 17                    | 7.600  | 18.182 | 8.128  | 0.163                               | 0.488                               | 0.732                               | 0.030                 | 0.000                               | 0.000                               | 0.000                               | 0.00              |
| 26-Jun                       | 24                    | 10.729 | 25.669 | 11.475 | 0.230                               | 0.689                               | 1.033                               | 0.780                 | 0.000                               | 0.000                               | 0.000                               | 0.00              |
| 27-Jun                       | 33                    | 14.752 | 35.295 | 15.778 | 0.316                               | 0.947                               | 1.420                               | 1.270                 | 0.000                               | 0.000                               | 0.000                               | 0.00              |
| 28-Jun                       | 23                    | 10.282 | 24.600 | 10.997 | 0.220                               | 0.660                               | 0.990                               | 0.010                 | 0.000                               | 0.000                               | 0.000                               | 0.00              |
| 29-Jun                       | 15                    | 6.706  | 16.043 | 7.172  | 0.143                               | 0.430                               | 0.645                               | 0.020                 | 0.000                               | 0.000                               | 0.000                               | 0.00              |
| 30-Jun                       | 20                    | 8.941  | 21.391 | 9.563  | 0.191                               | 0.574                               | 0.861                               | 3.690                 | 0.000                               | 0.000                               | 0.000                               | 0.00              |
| 01-Jul                       | 22                    | 9.835  | 23.530 | 10.519 | 0.210                               | 0.631                               | 0.947                               | 0.040                 | 0.000                               | 0.000                               | 0.000                               | 0.00              |
| 02-Jul                       | 14                    | 6.259  | 14.974 | 6.694  | 0.134                               | 0.402                               | 0.602                               | 0.000                 | 0.000                               | 0.000                               | 0.000                               | 0.00              |
| 03-Jul                       | 13                    | 5.812  | 13.904 | 6.216  | 0.124                               | 0.373                               | 0.559                               | 0.000                 | 0.000                               | 0.000                               | 0.000                               | 0.00              |
| 04-Jul                       | 22                    | 9.835  | 23.530 | 10.519 | 0.210                               | 0.631                               | 0.947                               | 0.150                 | 0.000                               | 0.000                               | 0.000                               | 0.00              |
| 05-Jul                       | 38                    | 16.988 | 40.643 | 18.169 | 0.363                               | 1.090                               | 1.635                               | 0.610                 | 0.000                               | 0.000                               | 0.000                               | 0.00              |
| 06-Jul                       | 29                    | 12.964 | 31.017 | 13.866 | 0.277                               | 0.832                               | 1.248                               | 1.970                 | 0.000                               | 0.000                               | 0.000                               | 0.00              |
| 07-Jul                       | 21                    | 9.388  | 22.461 | 10.041 | 0.201                               | 0.602                               | 0.904                               | 0.700                 | 0.000                               | 0.000                               | 0.000                               | 0.00              |
| 08-Jul                       | 16                    | 7.153  | 17.113 | 7.650  | 0.153                               | 0.459                               | 0.689                               | 0.005                 | 0.000                               | 0.000                               | 0.000                               | 0.00              |
| 09-Jul                       | 16                    | 7.153  | 17.113 | 7.650  | 0.153                               | 0.459                               | 0.689                               | 0.040                 | 0.000                               | 0.000                               | 0.000                               | 0.00              |
| 10-Jul                       | 16                    | 7.153  | 17.113 | 7.650  | 0.153                               | 0.459                               | 0.689                               | 0.000                 | 0.000                               | 0.000                               | 0.000                               | 0.00              |
| 11-Jul                       | 20                    | 8.941  | 21.391 | 9.563  | 0.191                               | 0.574                               | 0.861                               | 0.900                 | 0.000                               | 0.000                               | 0.000                               | 0.00              |
| 12-Jul                       | 16                    | 7.153  | 17.113 | 7.650  | 0.153                               | 0.459                               | 0.689                               | 0.450                 | 0.000                               | 0.000                               | 0.000                               | 0.00              |
| 13-Jul                       | 14                    | 6.259  | 14.974 | 6.694  | 0.134                               | 0.402                               | 0.602                               | 0.000                 | 0.000                               | 0.000                               | 0.000                               | 0.00              |
| 14-Jul                       | 14                    | 6.259  | 14.974 | 6.694  | 0.134                               | 0.402                               | 0.602                               | 0.000                 | 0.000                               | 0.000                               | 0.000                               | 0.00              |
| 15-Jul                       | 15                    | 6.706  | 16.043 | 7.172  | 0.143                               | 0.430                               | 0.645                               | 0.000                 | 0.000                               | 0.000                               | 0.000                               | 0.00              |
| 16-Jul                       | 24                    | 10.729 | 25.669 | 11.475 | 0.230                               | 0.689                               | 1.033                               | 0.005                 | 0.000                               | 0.000                               | 0.881                               | 3.30              |
| 17-Jul                       | 20                    | 8.941  | 21.391 | 9.563  | 0.191                               | 0.574                               | 0.861                               | 0.020                 | 0.000                               | 0.000                               | 0.000                               | 0.00              |
| 18-Jul                       | 28                    | 12.517 | 29.948 | 13.388 | 0.268                               | 0.803                               | 1.205                               | 0.005                 | 0.000                               | 0.000                               | 7.557                               | 28.29             |
| 19-Jul                       | 22                    | 9.835  | 23.530 | 10.519 | 0.210                               | 0.631                               | 0.947                               | 0.005                 | 0.000                               | 0.000                               | 0.000                               | 0.00              |
| 20-Jul                       | 23                    | 10.282 | 24.600 | 10.997 | 0.220                               | 0.660                               | 0.990                               | 0.010                 | 0.000                               | 0.000                               | 0.000                               | 0.00              |
| 21-Jul                       | 16                    | 7.153  | 17.113 | 7.650  | 0.153                               | 0.459                               | 0.689                               | 0.260                 | 0.000                               | 0.000                               | 0.000                               | 0.00              |
| 22-Jul                       | 17                    | 7.600  | 18.182 | 8.128  | 0.163                               | 0.488                               | 0.732                               | 0.000                 | 0.000                               | 0.000                               | 0.000                               | 0.00              |
| 23-Jul                       | 22                    | 9.835  | 23.530 | 10.519 | 0.210                               | 0.631                               | 0.947                               | 0.010                 | 0.000                               | 0.000                               | 0.000                               | 0.00              |
| 24-Jul                       | 14                    | 6.259  | 14.974 | 6.694  | 0.134                               | 0.402                               | 0.602                               | 0.140                 | 0.000                               | 0.000                               | 0.000                               | 0.00              |
| 25-Jul                       | 24                    | 10.729 | 25.669 | 11.475 | 0.230                               | 0.689                               | 1.033                               | 1.060                 | 0.000                               | 0.000                               | 0.000                               | 0.00              |
| 26-Jul                       | 23                    | 10.282 | 24.600 | 10.997 | 0.220                               | 0.660                               | 0.990                               | 0.010                 | 0.000                               | 0.000                               | 0.000                               | 0.00              |
| 27-Jul                       | 18                    | 8.047  | 19.252 | 8.606  | 0.172                               | 0.516                               | 0.775                               | 0.160                 | 0.000                               | 0.000                               | 0.000                               | 0.00              |
| 28-Jul                       | 16                    | 7.153  | 17.113 | 7.650  | 0.153                               | 0.459                               | 0.689                               | 0.000                 | 0.000                               | 0.000                               | 0.000                               | 0.00              |
| 29-Jul                       | 18                    | 8.047  | 19.252 | 8.606  | 0.172                               | 0.516                               | 0.775                               | 0.000                 | 0.000                               | 0.000                               | 0.000                               | 0.00              |
| 30-Jul                       | 16                    | 7.153  | 17.113 | 7.650  | 0.153                               | 0.459                               | 0.689                               | 0.160                 | 0.000                               | 0.000                               | 0.000                               | 0.00              |
| 31-Jul                       | 16                    | 7.153  | 17.113 | 7.650  | 0.153                               | 0.459                               | 0.689                               | 1.000                 | 0.000                               | 0.000                               | 0.000                               | 0.00              |
| 01-Aug                       | 21                    | 9.388  | 22.461 | 10.041 | 0.201                               | 0.602                               | 0.904                               | 3.730                 | 0.000                               | 0.000                               | 0.000                               | 0.00              |
| 02-Aug                       | 20                    | 8.941  | 21.391 | 9.563  | 0.191                               | 0.574                               | 0.861                               | 0.500                 | 0.000                               | 0.000                               | 0.000                               | 0.00              |
| 03-Aug                       | 24                    | 10.729 | 25.669 | 11.475 | 0.230                               | 0.689                               | 1.033                               | 0.160                 | 0.000                               | 0.000                               | 0.000                               | 0.00              |
| 04-Aug                       | 16                    | 7.153  | 17.113 | 7.650  | 0.153                               | 0.459                               | 0.689                               | 0.000                 | 0.000                               | 0.000                               | 0.000                               | 0.00              |
| 05-Aug                       | 13                    | 5.812  | 13.904 | 6.216  | 0.124                               | 0.373                               | 0.559                               | 0.000                 | 0.000                               | 0.000                               | 0.000                               | 0.00              |
| 06-Aug                       | 21                    | 9.388  | 22.461 | 10.041 | 0.201                               | 0.602                               | 0.904                               | 0.010                 | 0.000                               | 0.000                               | 0.000                               | 0.00              |
| 07-Aug                       | 18                    | 8.047  | 19.252 | 8.606  | 0.172                               | 0.516                               | 0.775                               | 0.010                 | 0.000                               | 0.000                               | 0.000                               | 0.00              |
| 08-Aug                       | 20                    | 8.941  | 21.391 | 9.563  | 0.191                               | 0.574                               | 0.861                               | 0.060                 | 0.000                               | 0.000                               | 0.000                               | 0.00              |

**FOSTER WHEELER ENVIRONMENTAL CORPORATION**  
**CALCULATION SHEET - EXCEL 5.0**

**By:** E. Deken, PE  
**Date:** 10/23/98  
**Ch'd By:** Darrel J. Graziani, P.E.  
**Date:** 11/07/98

**Cal. No.:** 981023ED01  
**Rev. No.:** SJRPP 2  
**OFS:** 7830.0020.0054

**Project:** JEA St. Johns Power Park

**Subject:** Fugitive Emission Estimates - Wind Erosion Limestone Storage Pile - Fuel Yard

**Assumptions:**

1. The threshold friction velocity was selected based on data available in AP-42, Section 13.2.5.
2. Roughness height was estimated based on largest values listed in AP-42, Section 13.2.5
3. Pile is always at maximum capacity which is maximizing emissions.

**References:**

1. AP-42, Section 13.2.5, Industrial Wind Erosion
2. 1997 Local Climatological Data, NOAA, National Climatic Data Center

**Erosion Potential Calculations**

Threshold Friction Velocity: **1**  
 Roughness Height (m): **0.005**

| Number<br>of<br>Disturbances | Fastest Mile Values<br>Anemometer Height (m) |        |        |        | Equivalent Friction Velocities<br>u* = 0.1u* |                                     |                                     | Rain Fall<br>(inches) | Erosion Potential<br>(g/m^2)        |                                     |                                     | Emissions<br>(lb) |
|------------------------------|----------------------------------------------|--------|--------|--------|----------------------------------------------|-------------------------------------|-------------------------------------|-----------------------|-------------------------------------|-------------------------------------|-------------------------------------|-------------------|
|                              | 6.1                                          |        | 10     |        | (m/s)                                        |                                     |                                     |                       | 36% Pile                            | 50% Pile                            | 14% Pile                            |                   |
|                              | (mph)                                        | (m/s)  | (mph)  | (m/s)  | u <sub>a</sub> /u <sub>t</sub> :0.2          | u <sub>a</sub> /u <sub>t</sub> :0.6 | u <sub>a</sub> /u <sub>t</sub> :0.9 |                       | u <sub>a</sub> /u <sub>t</sub> :0.2 | u <sub>a</sub> /u <sub>t</sub> :0.6 | u <sub>a</sub> /u <sub>t</sub> :0.9 |                   |
| 09-Aug                       | 17                                           | 7.600  | 18.182 | 8.128  | 0.163                                        | 0.488                               | 0.732                               | 0.020                 | 0.000                               | 0.000                               | 0.000                               | 0.00              |
| 10-Aug                       | 17                                           | 7.600  | 18.182 | 8.128  | 0.163                                        | 0.488                               | 0.732                               | 0.220                 | 0.000                               | 0.000                               | 0.000                               | 0.00              |
| 11-Aug                       | 15                                           | 6.706  | 16.043 | 7.172  | 0.143                                        | 0.430                               | 0.645                               | 0.005                 | 0.000                               | 0.000                               | 0.000                               | 0.00              |
| 12-Aug                       | 15                                           | 6.706  | 16.043 | 7.172  | 0.143                                        | 0.430                               | 0.645                               | 0.000                 | 0.000                               | 0.000                               | 0.000                               | 0.00              |
| 13-Aug                       | 15                                           | 6.706  | 16.043 | 7.172  | 0.143                                        | 0.430                               | 0.645                               | 0.450                 | 0.000                               | 0.000                               | 0.000                               | 0.00              |
| 14-Aug                       | 13                                           | 5.812  | 13.904 | 6.216  | 0.124                                        | 0.373                               | 0.559                               | 0.010                 | 0.000                               | 0.000                               | 0.000                               | 0.00              |
| 15-Aug                       | 23                                           | 10.282 | 24.600 | 10.997 | 0.220                                        | 0.660                               | 0.990                               | 0.005                 | 0.000                               | 0.000                               | 0.000                               | 0.00              |
| 16-Aug                       | 30                                           | 13.411 | 32.087 | 14.344 | 0.287                                        | 0.861                               | 1.291                               | 0.710                 | 0.000                               | 0.000                               | 0.000                               | 0.00              |
| 17-Aug                       | 14                                           | 6.259  | 14.974 | 6.694  | 0.134                                        | 0.402                               | 0.602                               | 0.000                 | 0.000                               | 0.000                               | 0.000                               | 0.00              |
| 18-Aug                       | 26                                           | 11.623 | 27.808 | 12.431 | 0.249                                        | 0.746                               | 1.119                               | 0.270                 | 0.000                               | 0.000                               | 0.000                               | 0.00              |
| 19-Aug                       | 16                                           | 7.153  | 17.113 | 7.650  | 0.153                                        | 0.459                               | 0.689                               | 0.240                 | 0.000                               | 0.000                               | 0.000                               | 0.00              |
| 20-Aug                       | 17                                           | 7.600  | 18.182 | 8.128  | 0.163                                        | 0.488                               | 0.732                               | 0.000                 | 0.000                               | 0.000                               | 0.000                               | 0.00              |
| 21-Aug                       | 21                                           | 9.388  | 22.461 | 10.041 | 0.201                                        | 0.602                               | 0.904                               | 0.160                 | 0.000                               | 0.000                               | 0.000                               | 0.00              |
| 22-Aug                       | 15                                           | 6.706  | 16.043 | 7.172  | 0.143                                        | 0.430                               | 0.645                               | 0.000                 | 0.000                               | 0.000                               | 0.000                               | 0.00              |
| 23-Aug                       | 21                                           | 9.388  | 22.461 | 10.041 | 0.201                                        | 0.602                               | 0.904                               | 0.020                 | 0.000                               | 0.000                               | 0.000                               | 0.00              |
| 24-Aug                       | 29                                           | 12.964 | 31.017 | 13.866 | 0.277                                        | 0.832                               | 1.248                               | 1.590                 | 0.000                               | 0.000                               | 0.000                               | 0.00              |
| 25-Aug                       | 18                                           | 8.047  | 19.252 | 8.606  | 0.172                                        | 0.516                               | 0.775                               | 0.000                 | 0.000                               | 0.000                               | 0.000                               | 0.00              |
| 26-Aug                       | 20                                           | 8.941  | 21.391 | 9.563  | 0.191                                        | 0.574                               | 0.861                               | 0.000                 | 0.000                               | 0.000                               | 0.000                               | 0.00              |
| 27-Aug                       | 11                                           | 4.917  | 11.765 | 5.259  | 0.105                                        | 0.316                               | 0.473                               | 0.000                 | 0.000                               | 0.000                               | 0.000                               | 0.00              |
| 28-Aug                       | 16                                           | 7.153  | 17.113 | 7.650  | 0.153                                        | 0.459                               | 0.689                               | 0.000                 | 0.000                               | 0.000                               | 0.000                               | 0.00              |
| 29-Aug                       | 17                                           | 7.600  | 18.182 | 8.128  | 0.163                                        | 0.488                               | 0.732                               | 0.000                 | 0.000                               | 0.000                               | 0.000                               | 0.00              |
| 30-Aug                       | 21                                           | 9.388  | 22.461 | 10.041 | 0.201                                        | 0.602                               | 0.904                               | 0.080                 | 0.000                               | 0.000                               | 0.000                               | 0.00              |
| 31-Aug                       | 16                                           | 7.153  | 17.113 | 7.650  | 0.153                                        | 0.459                               | 0.689                               | 0.000                 | 0.000                               | 0.000                               | 0.000                               | 0.00              |
| 01-Sep                       | 21                                           | 9.388  | 22.461 | 10.041 | 0.201                                        | 0.602                               | 0.904                               | 0.005                 | 0.000                               | 0.000                               | 0.000                               | 0.00              |
| 02-Sep                       | 16                                           | 7.153  | 17.113 | 7.650  | 0.153                                        | 0.459                               | 0.689                               | 0.130                 | 0.000                               | 0.000                               | 0.000                               | 0.00              |
| 03-Sep                       | 11                                           | 4.917  | 11.765 | 5.259  | 0.105                                        | 0.316                               | 0.473                               | 0.000                 | 0.000                               | 0.000                               | 0.000                               | 0.00              |
| 04-Sep                       | 26                                           | 11.623 | 27.808 | 12.431 | 0.249                                        | 0.746                               | 1.119                               | 0.005                 | 0.000                               | 0.000                               | 3.790                               | 14.19             |
| 05-Sep                       | 21                                           | 9.388  | 22.461 | 10.041 | 0.201                                        | 0.602                               | 0.904                               | 0.000                 | 0.000                               | 0.000                               | 0.000                               | 0.00              |
| 06-Sep                       | 18                                           | 8.047  | 19.252 | 8.606  | 0.172                                        | 0.516                               | 0.775                               | 0.000                 | 0.000                               | 0.000                               | 0.000                               | 0.00              |
| 07-Sep                       | 16                                           | 7.153  | 17.113 | 7.650  | 0.153                                        | 0.459                               | 0.689                               | 0.000                 | 0.000                               | 0.000                               | 0.000                               | 0.00              |
| 08-Sep                       | 14                                           | 6.259  | 14.974 | 6.694  | 0.134                                        | 0.402                               | 0.602                               | 0.000                 | 0.000                               | 0.000                               | 0.000                               | 0.00              |
| 09-Sep                       | 14                                           | 6.259  | 14.974 | 6.694  | 0.134                                        | 0.402                               | 0.602                               | 0.000                 | 0.000                               | 0.000                               | 0.000                               | 0.00              |
| 10-Sep                       | 17                                           | 7.600  | 18.182 | 8.128  | 0.163                                        | 0.488                               | 0.732                               | 0.005                 | 0.000                               | 0.000                               | 0.000                               | 0.00              |
| 11-Sep                       | 15                                           | 6.706  | 16.043 | 7.172  | 0.143                                        | 0.430                               | 0.645                               | 0.000                 | 0.000                               | 0.000                               | 0.000                               | 0.00              |
| 12-Sep                       | 14                                           | 6.259  | 14.974 | 6.694  | 0.134                                        | 0.402                               | 0.602                               | 0.000                 | 0.000                               | 0.000                               | 0.000                               | 0.00              |
| 13-Sep                       | 14                                           | 6.259  | 14.974 | 6.694  | 0.134                                        | 0.402                               | 0.602                               | 0.000                 | 0.000                               | 0.000                               | 0.000                               | 0.00              |
| 14-Sep                       | 20                                           | 8.941  | 21.391 | 9.563  | 0.191                                        | 0.574                               | 0.861                               | 0.030                 | 0.000                               | 0.000                               | 0.000                               | 0.00              |
| 15-Sep                       | 14                                           | 6.259  | 14.974 | 6.694  | 0.134                                        | 0.402                               | 0.602                               | 0.000                 | 0.000                               | 0.000                               | 0.000                               | 0.00              |
| 16-Sep                       | 14                                           | 6.259  | 14.974 | 6.694  | 0.134                                        | 0.402                               | 0.602                               | 0.000                 | 0.000                               | 0.000                               | 0.000                               | 0.00              |
| 17-Sep                       | 16                                           | 7.153  | 17.113 | 7.650  | 0.153                                        | 0.459                               | 0.689                               | 0.000                 | 0.000                               | 0.000                               | 0.000                               | 0.00              |
| 18-Sep                       | 11                                           | 4.917  | 11.765 | 5.259  | 0.105                                        | 0.316                               | 0.473                               | 0.000                 | 0.000                               | 0.000                               | 0.000                               | 0.00              |
| 19-Sep                       | 14                                           | 6.259  | 14.974 | 6.694  | 0.134                                        | 0.402                               | 0.602                               | 0.000                 | 0.000                               | 0.000                               | 0.000                               | 0.00              |
| 20-Sep                       | 11                                           | 4.917  | 11.765 | 5.259  | 0.105                                        | 0.316                               | 0.473                               | 0.000                 | 0.000                               | 0.000                               | 0.000                               | 0.00              |
| 21-Sep                       | 16                                           | 7.153  | 17.113 | 7.650  | 0.153                                        | 0.459                               | 0.689                               | 0.000                 | 0.000                               | 0.000                               | 0.000                               | 0.00              |
| 22-Sep                       | 17                                           | 7.600  | 18.182 | 8.128  | 0.163                                        | 0.488                               | 0.732                               | 0.000                 | 0.000                               | 0.000                               | 0.000                               | 0.00              |
| 23-Sep                       | 20                                           | 8.941  | 21.391 | 9.563  | 0.191                                        | 0.574                               | 0.861                               | 0.180                 | 0.000                               | 0.000                               | 0.000                               | 0.00              |
| 24-Sep                       | 14                                           | 6.259  | 14.974 | 6.694  | 0.134                                        | 0.402                               | 0.602                               | 1.000                 | 0.000                               | 0.000                               | 0.000                               | 0.00              |
| 25-Sep                       | 23                                           | 10.282 | 24.600 | 10.997 | 0.220                                        | 0.660                               | 0.990                               | 0.280                 | 0.000                               | 0.000                               | 0.000                               | 0.00              |
| 26-Sep                       | 16                                           | 7.153  | 17.113 | 7.650  | 0.153                                        | 0.459                               | 0.689                               | 1.080                 | 0.000                               | 0.000                               | 0.000                               | 0.00              |
| 27-Sep                       | 7                                            | 3.129  | 7.487  | 3.347  | 0.067                                        | 0.201                               | 0.301                               | 2.250                 | 0.000                               | 0.000                               | 0.000                               | 0.00              |
| 28-Sep                       | 15                                           | 6.706  | 16.043 | 7.172  | 0.143                                        | 0.430                               | 0.645                               | 0.010                 | 0.000                               | 0.000                               | 0.000                               | 0.00              |
| 29-Sep                       | 16                                           | 7.153  | 17.113 | 7.650  | 0.153                                        | 0.459                               | 0.689                               | 0.000                 | 0.000                               | 0.000                               | 0.000                               | 0.00              |
| 30-Sep                       | 17                                           | 7.600  | 18.182 | 8.128  | 0.163                                        | 0.488                               | 0.732                               | 0.000                 | 0.000                               | 0.000                               | 0.000                               | 0.00              |
| 01-Oct                       | 17                                           | 7.600  | 18.182 | 8.128  | 0.163                                        | 0.488                               | 0.732                               | 0.000                 | 0.000                               | 0.000                               | 0.000                               | 0.00              |
| 02-Oct                       | 23                                           | 10.282 | 24.600 | 10.997 | 0.220                                        | 0.660                               | 0.990                               | 0.000                 | 0.000                               | 0.000                               | 0.000                               | 0.00              |

**FOSTER WHEELER ENVIRONMENTAL CORPORATION**  
**CALCULATION SHEET - EXCEL 5.0**

By: E. Deken, PE  
 Date: 10/23/98  
 Ck'd By: Darrel J. Graziani, P.E.  
 Date: 11/07/98

Cal. No.: 981023ED01  
 Rev. No.: SJRPP 2  
 OFS: 7830.0020.0054

**Project:** JEA St. Johns Power Park

**Subject:** Fugitive Emission Estimates - Wind Erosion Limestone Storage Pile - Fuel Yard

**Assumptions:**

1. The threshold friction velocity was selected based on data available in AP-42, Section 13.2.5.
2. Roughness height was estimated based on largest values listed in AP-42, Section 13.2.5
3. Pile is always at maximum capacity which is maximizing emissions.

**References:**

1. AP-42, Section 13.2.5, Industrial Wind Erosion
2. 1997 Local Climatological Data, NOAA, National Climatic Data Center

**Erosion Potential Calculations**

Threshold Friction Velocity: **1**  
 Roughness Height (m) **0.005**

| Number<br>of<br>Disturbances | Fastest Mile Values   |        |        |        | Equivalent Friction Velocities |               |               | Rain Fall<br>(Inches) | Erosion Potential |               |               | Emissions<br>(lb) |
|------------------------------|-----------------------|--------|--------|--------|--------------------------------|---------------|---------------|-----------------------|-------------------|---------------|---------------|-------------------|
|                              | Anemometer Height (m) |        |        |        | $u^*=0.1u^*$<br>(m/s)          |               |               |                       | (g/m^2)           |               |               |                   |
|                              | 6.1                   |        | 10     |        |                                |               |               |                       | 36% Pile          | 50% Pile      | 14% Pile      |                   |
|                              | (mph)                 | (m/s)  | (mph)  | (m/s)  | $u_a/u_*:0.2$                  | $u_a/u_*:0.6$ | $u_a/u_*:0.9$ |                       | $u_a/u_*:0.2$     | $u_a/u_*:0.6$ | $u_a/u_*:0.9$ |                   |
| 03-Oct                       | 17                    | 7.600  | 18.182 | 8.128  | 0.163                          | 0.488         | 0.732         | 0.005                 | 0.000             | 0.000         | 0.000         | 0.00              |
| 04-Oct                       | 21                    | 9.388  | 22.461 | 10.041 | 0.201                          | 0.602         | 0.904         | 0.005                 | 0.000             | 0.000         | 0.000         | 0.00              |
| 05-Oct                       | 20                    | 8.941  | 21.391 | 9.563  | 0.191                          | 0.574         | 0.861         | 0.000                 | 0.000             | 0.000         | 0.000         | 0.00              |
| 06-Oct                       | 15                    | 6.706  | 16.043 | 7.172  | 0.143                          | 0.430         | 0.645         | 0.000                 | 0.000             | 0.000         | 0.000         | 0.00              |
| 07-Oct                       | 18                    | 8.047  | 19.252 | 8.606  | 0.172                          | 0.516         | 0.775         | 0.000                 | 0.000             | 0.000         | 0.000         | 0.00              |
| 08-Oct                       | 21                    | 9.388  | 22.461 | 10.041 | 0.201                          | 0.602         | 0.904         | 0.005                 | 0.000             | 0.000         | 0.000         | 0.00              |
| 09-Oct                       | 23                    | 10.282 | 24.600 | 10.997 | 0.220                          | 0.660         | 0.990         | 0.170                 | 0.000             | 0.000         | 0.000         | 0.00              |
| 10-Oct                       | 21                    | 9.388  | 22.461 | 10.041 | 0.201                          | 0.602         | 0.904         | 0.000                 | 0.000             | 0.000         | 0.000         | 0.00              |
| 11-Oct                       | 20                    | 8.941  | 21.391 | 9.563  | 0.191                          | 0.574         | 0.861         | 0.090                 | 0.000             | 0.000         | 0.000         | 0.00              |
| 12-Oct                       | 20                    | 8.941  | 21.391 | 9.563  | 0.191                          | 0.574         | 0.861         | 0.050                 | 0.000             | 0.000         | 0.000         | 0.00              |
| 13-Oct                       | 15                    | 6.706  | 16.043 | 7.172  | 0.143                          | 0.430         | 0.645         | 0.005                 | 0.000             | 0.000         | 0.000         | 0.00              |
| 14-Oct                       | 13                    | 5.812  | 13.904 | 6.216  | 0.124                          | 0.373         | 0.559         | 0.000                 | 0.000             | 0.000         | 0.000         | 0.00              |
| 15-Oct                       | 15                    | 6.706  | 16.043 | 7.172  | 0.143                          | 0.430         | 0.645         | 0.240                 | 0.000             | 0.000         | 0.000         | 0.00              |
| 16-Oct                       | 16                    | 7.153  | 17.113 | 7.650  | 0.153                          | 0.459         | 0.689         | 0.050                 | 0.000             | 0.000         | 0.000         | 0.00              |
| 17-Oct                       | 11                    | 4.917  | 11.765 | 5.259  | 0.105                          | 0.316         | 0.473         | 0.000                 | 0.000             | 0.000         | 0.000         | 0.00              |
| 18-Oct                       | 14                    | 6.259  | 14.974 | 6.694  | 0.134                          | 0.402         | 0.602         | 0.050                 | 0.000             | 0.000         | 0.000         | 0.00              |
| 19-Oct                       | 20                    | 8.941  | 21.391 | 9.563  | 0.191                          | 0.574         | 0.861         | 0.000                 | 0.000             | 0.000         | 0.000         | 0.00              |
| 20-Oct                       | 15                    | 6.706  | 16.043 | 7.172  | 0.143                          | 0.430         | 0.645         | 0.000                 | 0.000             | 0.000         | 0.000         | 0.00              |
| 21-Oct                       | 10                    | 4.470  | 10.696 | 4.781  | 0.096                          | 0.287         | 0.430         | 0.000                 | 0.000             | 0.000         | 0.000         | 0.00              |
| 22-Oct                       | 14                    | 6.259  | 14.974 | 6.694  | 0.134                          | 0.402         | 0.602         | 0.000                 | 0.000             | 0.000         | 0.000         | 0.00              |
| 23-Oct                       | 14                    | 6.259  | 14.974 | 6.694  | 0.134                          | 0.402         | 0.602         | 0.000                 | 0.000             | 0.000         | 0.000         | 0.00              |
| 24-Oct                       | 20                    | 8.941  | 21.391 | 9.563  | 0.191                          | 0.574         | 0.861         | 0.290                 | 0.000             | 0.000         | 0.000         | 0.00              |
| 25-Oct                       | 11                    | 4.917  | 11.765 | 5.259  | 0.105                          | 0.316         | 0.473         | 0.000                 | 0.000             | 0.000         | 0.000         | 0.00              |
| 26-Oct                       | 22                    | 9.835  | 23.530 | 10.519 | 0.210                          | 0.631         | 0.947         | 0.580                 | 0.000             | 0.000         | 0.000         | 0.00              |
| 27-Oct                       | 22                    | 9.835  | 23.530 | 10.519 | 0.210                          | 0.631         | 0.947         | 2.640                 | 0.000             | 0.000         | 0.000         | 0.00              |
| 28-Oct                       | 14                    | 6.259  | 14.974 | 6.694  | 0.134                          | 0.402         | 0.602         | 0.000                 | 0.000             | 0.000         | 0.000         | 0.00              |
| 29-Oct                       | 10                    | 4.470  | 10.696 | 4.781  | 0.096                          | 0.287         | 0.430         | 0.000                 | 0.000             | 0.000         | 0.000         | 0.00              |
| 30-Oct                       | 13                    | 5.812  | 13.904 | 6.216  | 0.124                          | 0.373         | 0.559         | 0.000                 | 0.000             | 0.000         | 0.000         | 0.00              |
| 31-Oct                       | 13                    | 5.812  | 13.904 | 6.216  | 0.124                          | 0.373         | 0.559         | 0.680                 | 0.000             | 0.000         | 0.000         | 0.00              |
| 01-Nov                       | 16                    | 7.153  | 17.113 | 7.650  | 0.153                          | 0.459         | 0.689         | 0.000                 | 0.000             | 0.000         | 0.000         | 0.00              |
| 02-Nov                       | 21                    | 9.388  | 22.461 | 10.041 | 0.201                          | 0.602         | 0.904         | 0.180                 | 0.000             | 0.000         | 0.000         | 0.00              |
| 03-Nov                       | 21                    | 9.388  | 22.461 | 10.041 | 0.201                          | 0.602         | 0.904         | 0.000                 | 0.000             | 0.000         | 0.000         | 0.00              |
| 04-Nov                       | 14                    | 6.259  | 14.974 | 6.694  | 0.134                          | 0.402         | 0.602         | 0.000                 | 0.000             | 0.000         | 0.000         | 0.00              |
| 05-Nov                       | 17                    | 7.600  | 18.182 | 8.128  | 0.163                          | 0.488         | 0.732         | 0.000                 | 0.000             | 0.000         | 0.000         | 0.00              |
| 06-Nov                       | 11                    | 4.917  | 11.765 | 5.259  | 0.105                          | 0.316         | 0.473         | 0.005                 | 0.000             | 0.000         | 0.000         | 0.00              |
| 07-Nov                       | 17                    | 7.600  | 18.182 | 8.128  | 0.163                          | 0.488         | 0.732         | 0.150                 | 0.000             | 0.000         | 0.000         | 0.00              |
| 08-Nov                       | 18                    | 8.047  | 19.252 | 8.606  | 0.172                          | 0.516         | 0.775         | 0.000                 | 0.000             | 0.000         | 0.000         | 0.00              |
| 09-Nov                       | 15                    | 6.706  | 16.043 | 7.172  | 0.143                          | 0.430         | 0.645         | 0.000                 | 0.000             | 0.000         | 0.000         | 0.00              |
| 10-Nov                       | 16                    | 7.153  | 17.113 | 7.650  | 0.153                          | 0.459         | 0.689         | 0.000                 | 0.000             | 0.000         | 0.000         | 0.00              |
| 11-Nov                       | 13                    | 5.812  | 13.904 | 6.216  | 0.124                          | 0.373         | 0.559         | 0.000                 | 0.000             | 0.000         | 0.000         | 0.00              |
| 12-Nov                       | 15                    | 6.706  | 16.043 | 7.172  | 0.143                          | 0.430         | 0.645         | 0.280                 | 0.000             | 0.000         | 0.000         | 0.00              |
| 13-Nov                       | 16                    | 7.153  | 17.113 | 7.650  | 0.153                          | 0.459         | 0.689         | 0.650                 | 0.000             | 0.000         | 0.000         | 0.00              |
| 14-Nov                       | 28                    | 12.517 | 29.948 | 13.388 | 0.268                          | 0.803         | 1.205         | 0.000                 | 0.000             | 0.000         | 7.557         | 28.29             |
| 15-Nov                       | 13                    | 5.812  | 13.904 | 6.216  | 0.124                          | 0.373         | 0.559         | 0.000                 | 0.000             | 0.000         | 0.000         | 0.00              |
| 16-Nov                       | 14                    | 6.259  | 14.974 | 6.694  | 0.134                          | 0.402         | 0.602         | 0.005                 | 0.000             | 0.000         | 0.000         | 0.00              |
| 17-Nov                       | 15                    | 6.706  | 16.043 | 7.172  | 0.143                          | 0.430         | 0.645         | 0.000                 | 0.000             | 0.000         | 0.000         | 0.00              |
| 18-Nov                       | 13                    | 5.812  | 13.904 | 6.216  | 0.124                          | 0.373         | 0.559         | 0.000                 | 0.000             | 0.000         | 0.000         | 0.00              |
| 19-Nov                       | 8                     | 3.576  | 8.556  | 3.825  | 0.077                          | 0.230         | 0.344         | 0.005                 | 0.000             | 0.000         | 0.000         | 0.00              |
| 20-Nov                       | 14                    | 6.259  | 14.974 | 6.694  | 0.134                          | 0.402         | 0.602         | 0.000                 | 0.000             | 0.000         | 0.000         | 0.00              |
| 21-Nov                       | 14                    | 6.259  | 14.974 | 6.694  | 0.134                          | 0.402         | 0.602         | 0.000                 | 0.000             | 0.000         | 0.000         | 0.00              |
| 22-Nov                       | 14                    | 6.259  | 14.974 | 6.694  | 0.134                          | 0.402         | 0.602         | 0.000                 | 0.000             | 0.000         | 0.000         | 0.00              |
| 23-Nov                       | 13                    | 5.812  | 13.904 | 6.216  | 0.124                          | 0.373         | 0.559         | 0.005                 | 0.000             | 0.000         | 0.000         | 0.00              |
| 24-Nov                       | 15                    | 6.706  | 16.043 | 7.172  | 0.143                          | 0.430         | 0.645         | 0.000                 | 0.000             | 0.000         | 0.000         | 0.00              |
| 25-Nov                       | 18                    | 8.047  | 19.252 | 8.606  | 0.172                          | 0.516         | 0.775         | 0.000                 | 0.000             | 0.000         | 0.000         | 0.00              |
| 26-Nov                       | 14                    | 6.259  | 14.974 | 6.694  | 0.134                          | 0.402         | 0.602         | 0.000                 | 0.000             | 0.000         | 0.000         | 0.00              |

**FOSTER WHEELER ENVIRONMENTAL CORPORATION**  
**CALCULATION SHEET - EXCEL 5.0**

By: E. Deken, PE  
 Date: 10/23/98  
 Ck'd By: Darrel J. Graziani, P.E.  
 Date: 11/07/98

Cal. No.: 981023ED01  
 Rev. No.: SJRPP 2  
 OFS: 7830.0020.0054

**Project:** JEA St. Johns Power Park

**Subject:** Fugitive Emission Estimates - Wind Erosion Limestone Storage Pile - Fuel Yard

**Assumptions:**

1. The threshold friction velocity was selected based on data available in AP-42, Section 13.2.5.
2. Roughness height was estimated based on largest values listed in AP-42, Section 13.2.5
3. Pile is always at maximum capacity which is maximizing emissions.

**References:**

1. AP-42, Section 13.2.5, Industrial Wind Erosion
2. 1997 Local Climatological Data, NOAA, National Climatic Data Center

**Erosion Potential Calculations**

Threshold Friction Velocity: **1**  
 Roughness Height (m) **0.005**

| Number<br>of<br>Disturbances | Fastest Mile Values   |        |        |        | Equivalent Friction Velocities |                |                | Rain Fall<br>(Inches) | Erosion Potential          |                            |                            | Emissions |
|------------------------------|-----------------------|--------|--------|--------|--------------------------------|----------------|----------------|-----------------------|----------------------------|----------------------------|----------------------------|-----------|
|                              | Anemometer Height (m) |        |        |        | $u^*=0.1u$                     |                |                |                       | (g/m^2)                    |                            |                            |           |
|                              | 6.1                   | 10     |        |        | $u_a/u_{*0.2}$                 | $u_a/u_{*0.6}$ | $u_a/u_{*0.9}$ |                       | 36% Pile<br>$u_a/u_{*0.2}$ | 50% Pile<br>$u_a/u_{*0.6}$ | 14% Pile<br>$u_a/u_{*0.9}$ |           |
|                              | (mph)                 | (m/s)  | (mph)  | (m/s)  |                                |                |                |                       |                            |                            |                            | (lb)      |
| 27-Nov                       | 15                    | 6.706  | 16.043 | 7.172  | 0.143                          | 0.430          | 0.645          | 0.000                 | 0.000                      | 0.000                      | 0.000                      | 0.00      |
| 28-Nov                       | 9                     | 4.023  | 9.626  | 4.303  | 0.086                          | 0.258          | 0.387          | 0.005                 | 0.000                      | 0.000                      | 0.000                      | 0.00      |
| 29-Nov                       | 25                    | 11.176 | 26.739 | 11.953 | 0.239                          | 0.717          | 1.076          | 1.130                 | 0.000                      | 0.000                      | 0.000                      | 0.00      |
| 30-Nov                       | 21                    | 9.388  | 22.461 | 10.041 | 0.201                          | 0.602          | 0.904          | 0.020                 | 0.000                      | 0.000                      | 0.000                      | 0.00      |
| 01-Dec                       | 20                    | 8.941  | 21.391 | 9.563  | 0.191                          | 0.574          | 0.861          | 0.000                 | 0.000                      | 0.000                      | 0.000                      | 0.00      |
| 02-Dec                       | 16                    | 7.153  | 17.113 | 7.650  | 0.153                          | 0.459          | 0.689          | 0.000                 | 0.000                      | 0.000                      | 0.000                      | 0.00      |
| 03-Dec                       | 15                    | 6.706  | 16.043 | 7.172  | 0.143                          | 0.430          | 0.645          | 0.100                 | 0.000                      | 0.000                      | 0.000                      | 0.00      |
| 04-Dec                       | 21                    | 9.388  | 22.461 | 10.041 | 0.201                          | 0.602          | 0.904          | 0.100                 | 0.000                      | 0.000                      | 0.000                      | 0.00      |
| 05-Dec                       | 20                    | 8.941  | 21.391 | 9.563  | 0.191                          | 0.574          | 0.861          | 0.000                 | 0.000                      | 0.000                      | 0.000                      | 0.00      |
| 06-Dec                       | 20                    | 8.941  | 21.391 | 9.563  | 0.191                          | 0.574          | 0.861          | 0.000                 | 0.000                      | 0.000                      | 0.000                      | 0.00      |
| 07-Dec                       | 11                    | 4.917  | 11.765 | 5.259  | 0.105                          | 0.316          | 0.473          | 0.000                 | 0.000                      | 0.000                      | 0.000                      | 0.00      |
| 08-Dec                       | 14                    | 6.259  | 14.974 | 6.694  | 0.134                          | 0.402          | 0.602          | 0.060                 | 0.000                      | 0.000                      | 0.000                      | 0.00      |
| 09-Dec                       | 11                    | 4.917  | 11.765 | 5.259  | 0.105                          | 0.316          | 0.473          | 0.110                 | 0.000                      | 0.000                      | 0.000                      | 0.00      |
| 10-Dec                       | 37                    | 16.540 | 39.574 | 17.691 | 0.354                          | 1.061          | 1.592          | 2.860                 | 0.000                      | 0.000                      | 0.000                      | 0.00      |
| 11-Dec                       | 15                    | 6.706  | 16.043 | 7.172  | 0.143                          | 0.430          | 0.645          | 0.005                 | 0.000                      | 0.000                      | 0.000                      | 0.00      |
| 12-Dec                       | 21                    | 9.388  | 22.461 | 10.041 | 0.201                          | 0.602          | 0.904          | 2.720                 | 0.000                      | 0.000                      | 0.000                      | 0.00      |
| 13-Dec                       | 13                    | 5.812  | 13.904 | 6.216  | 0.124                          | 0.373          | 0.559          | 0.300                 | 0.000                      | 0.000                      | 0.000                      | 0.00      |
| 14-Dec                       | 20                    | 8.941  | 21.391 | 9.563  | 0.191                          | 0.574          | 0.861          | 1.370                 | 0.000                      | 0.000                      | 0.000                      | 0.00      |
| 15-Dec                       | 26                    | 11.623 | 27.808 | 12.431 | 0.249                          | 0.746          | 1.119          | 1.590                 | 0.000                      | 0.000                      | 0.000                      | 0.00      |
| 16-Dec                       | 17                    | 7.600  | 18.182 | 8.128  | 0.163                          | 0.488          | 0.732          | 0.000                 | 0.000                      | 0.000                      | 0.000                      | 0.00      |
| 17-Dec                       | 14                    | 6.259  | 14.974 | 6.694  | 0.134                          | 0.402          | 0.602          | 0.000                 | 0.000                      | 0.000                      | 0.000                      | 0.00      |
| 18-Dec                       | 13                    | 5.812  | 13.904 | 6.216  | 0.124                          | 0.373          | 0.559          | 0.000                 | 0.000                      | 0.000                      | 0.000                      | 0.00      |
| 19-Dec                       | 7                     | 3.129  | 7.487  | 3.347  | 0.067                          | 0.201          | 0.301          | 0.000                 | 0.000                      | 0.000                      | 0.000                      | 0.00      |
| 20-Dec                       | 13                    | 5.812  | 13.904 | 6.216  | 0.124                          | 0.373          | 0.559          | 0.000                 | 0.000                      | 0.000                      | 0.000                      | 0.00      |
| 21-Dec                       | 14                    | 6.259  | 14.974 | 6.694  | 0.134                          | 0.402          | 0.602          | 0.000                 | 0.000                      | 0.000                      | 0.000                      | 0.00      |
| 22-Dec                       | 16                    | 7.153  | 17.113 | 7.650  | 0.153                          | 0.459          | 0.689          | 0.010                 | 0.000                      | 0.000                      | 0.000                      | 0.00      |
| 23-Dec                       | 13                    | 5.812  | 13.904 | 6.216  | 0.124                          | 0.373          | 0.559          | 0.030                 | 0.000                      | 0.000                      | 0.000                      | 0.00      |
| 24-Dec                       | 15                    | 6.706  | 16.043 | 7.172  | 0.143                          | 0.430          | 0.645          | 0.190                 | 0.000                      | 0.000                      | 0.000                      | 0.00      |
| 25-Dec                       | 14                    | 6.259  | 14.974 | 6.694  | 0.134                          | 0.402          | 0.602          | 0.090                 | 0.000                      | 0.000                      | 0.000                      | 0.00      |
| 26-Dec                       | 13                    | 5.812  | 13.904 | 6.216  | 0.124                          | 0.373          | 0.559          | 0.170                 | 0.000                      | 0.000                      | 0.000                      | 0.00      |
| 27-Dec                       | 25                    | 11.176 | 26.739 | 11.953 | 0.239                          | 0.717          | 1.076          | 0.040                 | 0.000                      | 0.000                      | 0.000                      | 0.00      |
| 28-Dec                       | 13                    | 5.812  | 13.904 | 6.216  | 0.124                          | 0.373          | 0.559          | 0.000                 | 0.000                      | 0.000                      | 0.000                      | 0.00      |
| 29-Dec                       | 26                    | 11.623 | 27.808 | 12.431 | 0.249                          | 0.746          | 1.119          | 0.030                 | 0.000                      | 0.000                      | 0.000                      | 0.00      |
| 30-Dec                       | 26                    | 11.623 | 27.808 | 12.431 | 0.249                          | 0.746          | 1.119          | 0.000                 | 0.000                      | 0.000                      | 3.790                      | 14.19     |
| 31-Dec                       | 25                    | 11.176 | 26.739 | 11.953 | 0.239                          | 0.717          | 1.076          | 0.000                 | 0.000                      | 0.000                      | 2.228                      | 8.34      |
| Totals:                      |                       |        |        |        |                                |                |                |                       | 0.00                       | 0.00                       | 43.59                      | 163.21    |
| Worst Case Day               |                       |        |        |        |                                |                |                |                       | 0.000                      | 0.000                      | 7.557                      |           |

**Storage Pile Calculations**

Control Efficiency 90.00%  
 Rain Days (>0.01") 120 AP42, Section 13.2.2  
 Storage Pile Surface Area 12140.58  
 Uncontrolled (TPY) 0.08  
 Controlled (TPY) 0.01  
 Worst Case Day (lb/24) 3 PM10 - AP42 Section 13.2.5  
 Worst Case Day (gps) 0.015 Per AP42, Section 13.2.5  
 #Days Winds > 12 MPH 343  
 #Days Rain > 0.01 " 130  
 Worst Case Day (gps) 0.024 Per EPA Background Document

**FOSTER WHEELER ENVIRONMENTAL CORPORATION**  
**CALCULATION SHEET - EXCEL 5.0**

**By:** E. Deken, PE  
**Date:** 10/23/98  
**Ch'd By:** Darrel J. Graziani, P.E.  
**Date:** 11/07/98

**Cal. No.:** 981023ED01  
**Rev. No.:** SJRPP 3  
**OFS:** 7830.0020.0054

**Project:** JEA St. Johns Power Park

**Subject:** Fugitive Emission Estimates - Wind Erosion Coal Storage Pile

**Assumptions:**

1. The threshold friction velocity was selected based on data available in AP-42, Section 13.2.5.
2. Roughness height was estimated based on largest values listed in AP-42, Section 13.2.5
3. Pile is always at maximum capacity which is maximizing emissions.

**References:**

1. AP-42, Section 13.2.5, Industrial Wind Erosion
2. 1997 Local Climatological Data, NOAA, National Climatic Data Center

**Erosion Potential Calculations**

Threshold Friction Velocity: **1.12**

Roughness Height (m) **0.003**

| Number<br>of<br>Disturbances | Fastest Mile Values<br>Anemometer Height (m) |        |        |        | Equivalent Friction Velocities<br>$u^* = 0.1 u^*$ |               |               | Rain Fall<br>(Inches) | Erosion Potential<br>( $\text{g}/\text{m}^2$ ) |                           |                           | Emissions<br>(lb) |
|------------------------------|----------------------------------------------|--------|--------|--------|---------------------------------------------------|---------------|---------------|-----------------------|------------------------------------------------|---------------------------|---------------------------|-------------------|
|                              | 6.1                                          |        | 10     |        | $u_a/u_t:0.2$ $u_a/u_t:0.6$ $u_a/u_t:0.9$         |               |               |                       | 36% Pile<br>$u_a/u_t:0.2$                      | 50% Pile<br>$u_a/u_t:0.6$ | 14% Pile<br>$u_a/u_t:0.9$ |                   |
|                              | (mph)                                        | (m/s)  | (mph)  | (m/s)  | $u_a/u_t:0.2$                                     | $u_a/u_t:0.6$ | $u_a/u_t:0.9$ |                       | $u_a/u_t:0.2$                                  | $u_a/u_t:0.6$             | $u_a/u_t:0.9$             |                   |
| 01-Jan                       | 15                                           | 6.706  | 15.973 | 7.141  | 0.143                                             | 0.428         | 0.643         | 0.000                 | 0.000                                          | 0.000                     | 0.000                     | 0.00              |
| 02-Jan                       | 14                                           | 6.259  | 14.908 | 6.665  | 0.133                                             | 0.400         | 0.600         | 0.000                 | 0.000                                          | 0.000                     | 0.000                     | 0.00              |
| 03-Jan                       | 16                                           | 7.153  | 17.038 | 7.617  | 0.152                                             | 0.457         | 0.686         | 0.000                 | 0.000                                          | 0.000                     | 0.000                     | 0.00              |
| 04-Jan                       | 15                                           | 6.706  | 15.973 | 7.141  | 0.143                                             | 0.428         | 0.643         | 0.000                 | 0.000                                          | 0.000                     | 0.000                     | 0.00              |
| 05-Jan                       | 22                                           | 9.835  | 23.428 | 10.473 | 0.209                                             | 0.628         | 0.943         | 0.120                 | 0.000                                          | 0.000                     | 0.000                     | 0.00              |
| 06-Jan                       | 9                                            | 4.023  | 9.584  | 4.284  | 0.086                                             | 0.257         | 0.386         | 0.280                 | 0.000                                          | 0.000                     | 0.000                     | 0.00              |
| 07-Jan                       | 14                                           | 6.259  | 14.908 | 6.665  | 0.133                                             | 0.400         | 0.600         | 0.030                 | 0.000                                          | 0.000                     | 0.000                     | 0.00              |
| 08-Jan                       | 17                                           | 7.600  | 18.103 | 8.093  | 0.162                                             | 0.486         | 0.728         | 0.040                 | 0.000                                          | 0.000                     | 0.000                     | 0.00              |
| 09-Jan                       | 20                                           | 8.941  | 21.298 | 9.521  | 0.190                                             | 0.571         | 0.857         | 0.600                 | 0.000                                          | 0.000                     | 0.000                     | 0.00              |
| 10-Jan                       | 26                                           | 11.623 | 27.687 | 12.377 | 0.248                                             | 0.743         | 1.114         | 0.000                 | 0.000                                          | 0.000                     | 0.000                     | 0.00              |
| 11-Jan                       | 14                                           | 6.259  | 14.908 | 6.665  | 0.133                                             | 0.400         | 0.600         | 0.000                 | 0.000                                          | 0.000                     | 0.000                     | 0.00              |
| 12-Jan                       | 10                                           | 4.470  | 10.649 | 4.760  | 0.095                                             | 0.286         | 0.428         | 0.000                 | 0.000                                          | 0.000                     | 0.000                     | 0.00              |
| 13-Jan                       | 15                                           | 6.706  | 15.973 | 7.141  | 0.143                                             | 0.428         | 0.643         | 0.000                 | 0.000                                          | 0.000                     | 0.000                     | 0.00              |
| 14-Jan                       | 20                                           | 8.941  | 21.298 | 9.521  | 0.190                                             | 0.571         | 0.857         | 0.000                 | 0.000                                          | 0.000                     | 0.000                     | 0.00              |
| 15-Jan                       | 16                                           | 7.153  | 17.038 | 7.617  | 0.152                                             | 0.457         | 0.686         | 0.005                 | 0.000                                          | 0.000                     | 0.000                     | 0.00              |
| 16-Jan                       | 23                                           | 10.282 | 24.492 | 10.949 | 0.219                                             | 0.657         | 0.985         | 0.330                 | 0.000                                          | 0.000                     | 0.000                     | 0.00              |
| 17-Jan                       | 24                                           | 10.729 | 25.557 | 11.425 | 0.229                                             | 0.686         | 1.028         | 0.000                 | 0.000                                          | 0.000                     | 0.000                     | 0.00              |
| 18-Jan                       | 21                                           | 9.388  | 22.363 | 9.997  | 0.200                                             | 0.600         | 0.900         | 0.000                 | 0.000                                          | 0.000                     | 0.000                     | 0.00              |
| 19-Jan                       | 17                                           | 7.600  | 18.103 | 8.093  | 0.162                                             | 0.486         | 0.728         | 0.000                 | 0.000                                          | 0.000                     | 0.000                     | 0.00              |
| 20-Jan                       | 15                                           | 6.706  | 15.973 | 7.141  | 0.143                                             | 0.428         | 0.643         | 0.000                 | 0.000                                          | 0.000                     | 0.000                     | 0.00              |
| 21-Jan                       | 16                                           | 7.153  | 17.038 | 7.617  | 0.152                                             | 0.457         | 0.686         | 0.000                 | 0.000                                          | 0.000                     | 0.000                     | 0.00              |
| 22-Jan                       | 22                                           | 9.835  | 23.428 | 10.473 | 0.209                                             | 0.628         | 0.943         | 0.000                 | 0.000                                          | 0.000                     | 0.000                     | 0.00              |
| 23-Jan                       | 15                                           | 6.706  | 15.973 | 7.141  | 0.143                                             | 0.428         | 0.643         | 0.005                 | 0.000                                          | 0.000                     | 0.000                     | 0.00              |
| 24-Jan                       | 18                                           | 8.047  | 19.168 | 8.569  | 0.171                                             | 0.514         | 0.771         | 0.000                 | 0.000                                          | 0.000                     | 0.000                     | 0.00              |
| 25-Jan                       | 18                                           | 8.047  | 19.168 | 8.569  | 0.171                                             | 0.514         | 0.771         | 1.200                 | 0.000                                          | 0.000                     | 0.000                     | 0.00              |
| 26-Jan                       | 17                                           | 7.600  | 18.103 | 8.093  | 0.162                                             | 0.486         | 0.728         | 0.000                 | 0.000                                          | 0.000                     | 0.000                     | 0.00              |
| 27-Jan                       | 18                                           | 8.047  | 19.168 | 8.569  | 0.171                                             | 0.514         | 0.771         | 0.000                 | 0.000                                          | 0.000                     | 0.000                     | 0.00              |
| 28-Jan                       | 17                                           | 7.600  | 18.103 | 8.093  | 0.162                                             | 0.486         | 0.728         | 0.000                 | 0.000                                          | 0.000                     | 0.000                     | 0.00              |
| 29-Jan                       | 22                                           | 9.835  | 23.428 | 10.473 | 0.209                                             | 0.628         | 0.943         | 0.000                 | 0.000                                          | 0.000                     | 0.000                     | 0.00              |
| 30-Jan                       | 15                                           | 6.706  | 15.973 | 7.141  | 0.143                                             | 0.428         | 0.643         | 0.310                 | 0.000                                          | 0.000                     | 0.000                     | 0.00              |
| 31-Jan                       | 15                                           | 6.706  | 15.973 | 7.141  | 0.143                                             | 0.428         | 0.643         | 0.000                 | 0.000                                          | 0.000                     | 0.000                     | 0.00              |
| 01-Feb                       | 21                                           | 9.388  | 22.363 | 9.997  | 0.200                                             | 0.600         | 0.900         | 0.000                 | 0.000                                          | 0.000                     | 0.000                     | 0.00              |
| 02-Feb                       | 10                                           | 4.470  | 10.649 | 4.760  | 0.095                                             | 0.286         | 0.428         | 0.000                 | 0.000                                          | 0.000                     | 0.000                     | 0.00              |
| 03-Feb                       | 13                                           | 5.812  | 13.844 | 6.189  | 0.124                                             | 0.371         | 0.557         | 0.000                 | 0.000                                          | 0.000                     | 0.000                     | 0.00              |
| 04-Feb                       | 15                                           | 6.706  | 15.973 | 7.141  | 0.143                                             | 0.428         | 0.643         | 0.000                 | 0.000                                          | 0.000                     | 0.000                     | 0.00              |
| 05-Feb                       | 17                                           | 7.600  | 18.103 | 8.093  | 0.162                                             | 0.486         | 0.728         | 0.000                 | 0.000                                          | 0.000                     | 0.000                     | 0.00              |
| 06-Feb                       | 14                                           | 6.259  | 14.908 | 6.665  | 0.133                                             | 0.400         | 0.600         | 0.000                 | 0.000                                          | 0.000                     | 0.000                     | 0.00              |
| 07-Feb                       | 11                                           | 4.917  | 11.714 | 5.237  | 0.105                                             | 0.314         | 0.471         | 0.000                 | 0.000                                          | 0.000                     | 0.000                     | 0.00              |
| 08-Feb                       | 21                                           | 9.388  | 22.363 | 9.997  | 0.200                                             | 0.600         | 0.900         | 0.030                 | 0.000                                          | 0.000                     | 0.000                     | 0.00              |
| 09-Feb                       | 16                                           | 7.153  | 17.038 | 7.617  | 0.152                                             | 0.457         | 0.686         | 0.005                 | 0.000                                          | 0.000                     | 0.000                     | 0.00              |
| 10-Feb                       | 11                                           | 4.917  | 11.714 | 5.237  | 0.105                                             | 0.314         | 0.471         | 0.005                 | 0.000                                          | 0.000                     | 0.000                     | 0.00              |
| 11-Feb                       | 10                                           | 4.470  | 10.649 | 4.760  | 0.095                                             | 0.286         | 0.428         | 0.000                 | 0.000                                          | 0.000                     | 0.000                     | 0.00              |
| 12-Feb                       | 14                                           | 6.259  | 14.908 | 6.665  | 0.133                                             | 0.400         | 0.600         | 0.000                 | 0.000                                          | 0.000                     | 0.000                     | 0.00              |
| 13-Feb                       | 18                                           | 8.047  | 19.168 | 8.569  | 0.171                                             | 0.514         | 0.771         | 0.130                 | 0.000                                          | 0.000                     | 0.000                     | 0.00              |
| 14-Feb                       | 18                                           | 8.047  | 19.168 | 8.569  | 0.171                                             | 0.514         | 0.771         | 0.040                 | 0.000                                          | 0.000                     | 0.000                     | 0.00              |
| 15-Feb                       | 18                                           | 8.047  | 19.168 | 8.569  | 0.171                                             | 0.514         | 0.771         | 0.400                 | 0.000                                          | 0.000                     | 0.000                     | 0.00              |
| 16-Feb                       | 15                                           | 6.706  | 15.973 | 7.141  | 0.143                                             | 0.428         | 0.643         | 0.000                 | 0.000                                          | 0.000                     | 0.000                     | 0.00              |
| 17-Feb                       | 20                                           | 8.941  | 21.298 | 9.521  | 0.190                                             | 0.571         | 0.857         | 0.000                 | 0.000                                          | 0.000                     | 0.000                     | 0.00              |
| 18-Feb                       | 16                                           | 7.153  | 17.038 | 7.617  | 0.152                                             | 0.457         | 0.686         | 0.000                 | 0.000                                          | 0.000                     | 0.000                     | 0.00              |
| 19-Feb                       | 14                                           | 6.259  | 14.908 | 6.665  | 0.133                                             | 0.400         | 0.600         | 0.005                 | 0.000                                          | 0.000                     | 0.000                     | 0.00              |
| 20-Feb                       | 20                                           | 8.941  | 21.298 | 9.521  | 0.190                                             | 0.571         | 0.857         | 0.000                 | 0.000                                          | 0.000                     | 0.000                     | 0.00              |
| 21-Feb                       | 24                                           | 10.729 | 25.557 | 11.425 | 0.229                                             | 0.686         | 1.028         | 0.000                 | 0.000                                          | 0.000                     | 0.000                     | 0.00              |
| 22-Feb                       | 17                                           | 7.600  | 18.103 | 8.093  | 0.162                                             | 0.486         | 0.728         | 0.310                 | 0.000                                          | 0.000                     | 0.000                     | 0.00              |
| 23-Feb                       | 18                                           | 8.047  | 19.168 | 8.569  | 0.171                                             | 0.514         | 0.771         | 0.005                 | 0.000                                          | 0.000                     | 0.000                     | 0.00              |
| 24-Feb                       | 18                                           | 8.047  | 19.168 | 8.569  | 0.171                                             | 0.514         | 0.771         | 0.140                 | 0.000                                          | 0.000                     | 0.000                     | 0.00              |

**FOSTER WHEELER ENVIRONMENTAL CORPORATION**  
**CALCULATION SHEET - EXCEL 5.0**

By: E. Deken, PE  
 Date: 10/23/98  
 Ck'd By: Darrel J. Graziani, P.E.  
 Date: 11/07/98

Cal. No.: 981023ED01  
 Rev. No.: SJRPP 3  
 OFS: 7830.0020.0054

**Project:** JEA St. Johns Power Park

**Subject:** Fugitive Emission Estimates - Wind Erosion Coal Storage Pile

**Assumptions:**

1. The threshold friction velocity was selected based on data available in AP-42, Section 13.2.5.
2. Roughness height was estimated based on largest values listed in AP-42, Section 13.2.5
3. Pile is always at maximum capacity which is maximizing emissions.

**References:**

1. AP-42, Section 13.2.5, Industrial Wind Erosion
2. 1997 Local Climatological Data, NOAA, National Climatic Data Center

**Erosion Potential Calculations**

Threshold Friction Velocity: **1.12**  
 Roughness Height (m) **0.003**

| Number<br>of<br>Disturbances | Fastest Mile Values   |        |        |        | Equivalent Friction Velocities |               |               | Rain Fall<br>(Inches) | Erosion Potential |               |               | Emissions<br>(lb) |
|------------------------------|-----------------------|--------|--------|--------|--------------------------------|---------------|---------------|-----------------------|-------------------|---------------|---------------|-------------------|
|                              | Anemometer Height (m) |        |        |        | $u^* = 0.1u^*$                 |               |               |                       | (g/m^2)           |               |               |                   |
|                              | 6:1                   |        | 10     |        | (m/s)                          |               |               |                       | 36% Pile          | 50% Pile      | 14% Pile      |                   |
|                              | (mph)                 | (m/s)  | (mph)  | (m/s)  | $u_z/u_z:0.2$                  | $u_z/u_z:0.6$ | $u_z/u_z:0.9$ |                       | $u_z/u_z:0.2$     | $u_z/u_z:0.6$ | $u_z/u_z:0.9$ |                   |
| 25-Feb                       | 21                    | 9.388  | 22.363 | 9.997  | 0.200                          | 0.600         | 0.900         | 0.230                 | 0.000             | 0.000         | 0.000         | 0.00              |
| 26-Feb                       | 15                    | 6.706  | 15.973 | 7.141  | 0.143                          | 0.428         | 0.643         | 0.000                 | 0.000             | 0.000         | 0.000         | 0.00              |
| 27-Feb                       | 20                    | 8.941  | 21.298 | 9.521  | 0.190                          | 0.571         | 0.857         | 0.000                 | 0.000             | 0.000         | 0.000         | 0.00              |
| 28-Feb                       | 20                    | 8.941  | 21.298 | 9.521  | 0.190                          | 0.571         | 0.857         | 0.000                 | 0.000             | 0.000         | 0.000         | 0.00              |
| 01-Mar                       | 20                    | 8.941  | 21.298 | 9.521  | 0.190                          | 0.571         | 0.857         | 0.000                 | 0.000             | 0.000         | 0.000         | 0.00              |
| 02-Mar                       | 15                    | 6.706  | 15.973 | 7.141  | 0.143                          | 0.428         | 0.643         | 0.000                 | 0.000             | 0.000         | 0.000         | 0.00              |
| 03-Mar                       | 22                    | 9.835  | 23.428 | 10.473 | 0.209                          | 0.628         | 0.943         | 0.000                 | 0.000             | 0.000         | 0.000         | 0.00              |
| 04-Mar                       | 17                    | 7.600  | 18.103 | 8.093  | 0.162                          | 0.486         | 0.728         | 0.000                 | 0.000             | 0.000         | 0.000         | 0.00              |
| 05-Mar                       | 11                    | 4.917  | 11.714 | 5.237  | 0.105                          | 0.314         | 0.471         | 0.000                 | 0.000             | 0.000         | 0.000         | 0.00              |
| 06-Mar                       | 24                    | 10.729 | 25.557 | 11.425 | 0.229                          | 0.686         | 1.028         | 0.005                 | 0.000             | 0.000         | 0.000         | 0.00              |
| 07-Mar                       | 18                    | 8.047  | 19.168 | 8.569  | 0.171                          | 0.514         | 0.771         | 0.000                 | 0.000             | 0.000         | 0.000         | 0.00              |
| 08-Mar                       | 14                    | 6.259  | 14.908 | 6.665  | 0.133                          | 0.400         | 0.600         | 0.000                 | 0.000             | 0.000         | 0.000         | 0.00              |
| 09-Mar                       | 20                    | 8.941  | 21.298 | 9.521  | 0.190                          | 0.571         | 0.857         | 0.000                 | 0.000             | 0.000         | 0.000         | 0.00              |
| 10-Mar                       | 16                    | 7.153  | 17.038 | 7.617  | 0.152                          | 0.457         | 0.686         | 0.000                 | 0.000             | 0.000         | 0.000         | 0.00              |
| 11-Mar                       | 17                    | 7.600  | 18.103 | 8.093  | 0.162                          | 0.486         | 0.728         | 0.005                 | 0.000             | 0.000         | 0.000         | 0.00              |
| 12-Mar                       | 20                    | 8.941  | 21.298 | 9.521  | 0.190                          | 0.571         | 0.857         | 0.000                 | 0.000             | 0.000         | 0.000         | 0.00              |
| 13-Mar                       | 29                    | 12.964 | 30.882 | 13.805 | 0.276                          | 0.828         | 1.242         | 0.170                 | 0.000             | 0.000         | 0.000         | 0.00              |
| 14-Mar                       | 18                    | 8.047  | 19.168 | 8.569  | 0.171                          | 0.514         | 0.771         | 0.390                 | 0.000             | 0.000         | 0.000         | 0.00              |
| 15-Mar                       | 15                    | 6.706  | 15.973 | 7.141  | 0.143                          | 0.428         | 0.643         | 0.000                 | 0.000             | 0.000         | 0.000         | 0.00              |
| 16-Mar                       | 20                    | 8.941  | 21.298 | 9.521  | 0.190                          | 0.571         | 0.857         | 0.000                 | 0.000             | 0.000         | 0.000         | 0.00              |
| 17-Mar                       | 18                    | 8.047  | 19.168 | 8.569  | 0.171                          | 0.514         | 0.771         | 0.000                 | 0.000             | 0.000         | 0.000         | 0.00              |
| 18-Mar                       | 15                    | 6.706  | 15.973 | 7.141  | 0.143                          | 0.428         | 0.643         | 0.005                 | 0.000             | 0.000         | 0.000         | 0.00              |
| 19-Mar                       | 18                    | 8.047  | 19.168 | 8.569  | 0.171                          | 0.514         | 0.771         | 0.000                 | 0.000             | 0.000         | 0.000         | 0.00              |
| 20-Mar                       | 13                    | 5.812  | 13.844 | 6.189  | 0.124                          | 0.371         | 0.557         | 0.030                 | 0.000             | 0.000         | 0.000         | 0.00              |
| 21-Mar                       | 14                    | 6.259  | 14.908 | 6.665  | 0.133                          | 0.400         | 0.600         | 0.470                 | 0.000             | 0.000         | 0.000         | 0.00              |
| 22-Mar                       | 21                    | 9.388  | 22.363 | 9.997  | 0.200                          | 0.600         | 0.900         | 0.000                 | 0.000             | 0.000         | 0.000         | 0.00              |
| 23-Mar                       | 17                    | 7.600  | 18.103 | 8.093  | 0.162                          | 0.486         | 0.728         | 0.000                 | 0.000             | 0.000         | 0.000         | 0.00              |
| 24-Mar                       | 25                    | 11.176 | 26.622 | 11.901 | 0.238                          | 0.714         | 1.071         | 0.005                 | 0.000             | 0.000         | 0.000         | 0.00              |
| 25-Mar                       | 24                    | 10.729 | 25.557 | 11.425 | 0.229                          | 0.686         | 1.028         | 0.490                 | 0.000             | 0.000         | 0.000         | 0.00              |
| 26-Mar                       | 17                    | 7.600  | 18.103 | 8.093  | 0.162                          | 0.486         | 0.728         | 0.020                 | 0.000             | 0.000         | 0.000         | 0.00              |
| 27-Mar                       | 13                    | 5.812  | 13.844 | 6.189  | 0.124                          | 0.371         | 0.557         | 0.000                 | 0.000             | 0.000         | 0.000         | 0.00              |
| 28-Mar                       | 17                    | 7.600  | 18.103 | 8.093  | 0.162                          | 0.486         | 0.728         | 0.000                 | 0.000             | 0.000         | 0.000         | 0.00              |
| 29-Mar                       | 22                    | 9.835  | 23.428 | 10.473 | 0.209                          | 0.628         | 0.943         | 0.005                 | 0.000             | 0.000         | 0.000         | 0.00              |
| 30-Mar                       | 30                    | 13.411 | 31.947 | 14.281 | 0.286                          | 0.857         | 1.285         | 0.270                 | 0.000             | 0.000         | 0.000         | 0.00              |
| 31-Mar                       | 25                    | 11.176 | 26.622 | 11.901 | 0.238                          | 0.714         | 1.071         | 0.005                 | 0.000             | 0.000         | 0.000         | 0.00              |
| 01-Apr                       | 15                    | 6.706  | 15.973 | 7.141  | 0.143                          | 0.428         | 0.643         | 0.000                 | 0.000             | 0.000         | 0.000         | 0.00              |
| 02-Apr                       | 21                    | 9.388  | 22.363 | 9.997  | 0.200                          | 0.600         | 0.900         | 0.000                 | 0.000             | 0.000         | 0.000         | 0.00              |
| 03-Apr                       | 16                    | 7.153  | 17.038 | 7.617  | 0.152                          | 0.457         | 0.686         | 0.000                 | 0.000             | 0.000         | 0.000         | 0.00              |
| 04-Apr                       | 16                    | 7.153  | 17.038 | 7.617  | 0.152                          | 0.457         | 0.686         | 0.000                 | 0.000             | 0.000         | 0.000         | 0.00              |
| 05-Apr                       | 21                    | 9.388  | 22.363 | 9.997  | 0.200                          | 0.600         | 0.900         | 0.000                 | 0.000             | 0.000         | 0.000         | 0.00              |
| 06-Apr                       | 17                    | 7.600  | 18.103 | 8.093  | 0.162                          | 0.486         | 0.728         | 0.005                 | 0.000             | 0.000         | 0.000         | 0.00              |
| 07-Apr                       | 18                    | 8.047  | 19.168 | 8.569  | 0.171                          | 0.514         | 0.771         | 0.000                 | 0.000             | 0.000         | 0.000         | 0.00              |
| 08-Apr                       | 21                    | 9.388  | 22.363 | 9.997  | 0.200                          | 0.600         | 0.900         | 0.000                 | 0.000             | 0.000         | 0.000         | 0.00              |
| 09-Apr                       | 15                    | 6.706  | 15.973 | 7.141  | 0.143                          | 0.428         | 0.643         | 0.000                 | 0.000             | 0.000         | 0.000         | 0.00              |
| 10-Apr                       | 21                    | 9.388  | 22.363 | 9.997  | 0.200                          | 0.600         | 0.900         | 0.000                 | 0.000             | 0.000         | 0.000         | 0.00              |
| 11-Apr                       | 21                    | 9.388  | 22.363 | 9.997  | 0.200                          | 0.600         | 0.900         | 0.005                 | 0.000             | 0.000         | 0.000         | 0.00              |
| 12-Apr                       | 22                    | 9.835  | 23.428 | 10.473 | 0.209                          | 0.628         | 0.943         | 0.050                 | 0.000             | 0.000         | 0.000         | 0.00              |
| 13-Apr                       | 16                    | 7.153  | 17.038 | 7.617  | 0.152                          | 0.457         | 0.686         | 0.000                 | 0.000             | 0.000         | 0.000         | 0.00              |
| 14-Apr                       | 14                    | 6.259  | 14.908 | 6.665  | 0.133                          | 0.400         | 0.600         | 0.550                 | 0.000             | 0.000         | 0.000         | 0.00              |
| 15-Apr                       | 20                    | 8.941  | 21.298 | 9.521  | 0.190                          | 0.571         | 0.857         | 0.160                 | 0.000             | 0.000         | 0.000         | 0.00              |
| 16-Apr                       | 16                    | 7.153  | 17.038 | 7.617  | 0.152                          | 0.457         | 0.686         | 0.000                 | 0.000             | 0.000         | 0.000         | 0.00              |
| 17-Apr                       | 24                    | 10.729 | 25.557 | 11.425 | 0.229                          | 0.686         | 1.028         | 0.000                 | 0.000             | 0.000         | 0.000         | 0.00              |
| 18-Apr                       | 20                    | 8.941  | 21.298 | 9.521  | 0.190                          | 0.571         | 0.857         | 0.000                 | 0.000             | 0.000         | 0.000         | 0.00              |
| 19-Apr                       | 20                    | 8.941  | 21.298 | 9.521  | 0.190                          | 0.571         | 0.857         | 0.000                 | 0.000             | 0.000         | 0.000         | 0.00              |
| 20-Apr                       | 18                    | 8.047  | 19.168 | 8.569  | 0.171                          | 0.514         | 0.771         | 0.000                 | 0.000             | 0.000         | 0.000         | 0.00              |

**FOSTER WHEELER ENVIRONMENTAL CORPORATION**  
**CALCULATION SHEET - EXCEL 5.0**

**By:** E. Deken, PE  
**Date:** 10/23/98  
**Ch'd By:** Darrel J. Graziani, P.E.  
**Date:** 11/07/98

**Cal. No.:** 981023ED01  
**Rev. No.:** SJRPP 3  
**OFS:** 7830.0020.0054

**Project:** JEA St. Johns Power Park

**Subject:** Fugitive Emission Estimates - Wind Erosion Coal Storage Pile

**Assumptions:**

1. The threshold friction velocity was selected based on data available in AP-42, Section 13.2.5.
2. Roughness height was estimated based on largest values listed in AP-42, Section 13.2.5
3. Pile is always at maximum capacity which is maximizing emissions.

**References:**

1. AP-42, Section 13.2.5, Industrial Wind Erosion
2. 1997 Local Climatological Data, NOAA, National Climatic Data Center

**Erosion Potential Calculations**

Threshold Friction Velocity: **1.12**  
 Roughness Height (m): **0.003**

| Number<br>of<br>Disturbances | Fastest Mile Values   |        |        |        | Equivalent Friction Velocities                  |       |       | Rain Fall<br>(Inches) | Erosion Potential         |                           |                           | Emissions<br>(lb) |
|------------------------------|-----------------------|--------|--------|--------|-------------------------------------------------|-------|-------|-----------------------|---------------------------|---------------------------|---------------------------|-------------------|
|                              | Anemometer Height (m) |        |        |        | $u^* = 0.1u^*$<br>(m/s)                         |       |       |                       | (g/m^2)                   |                           |                           |                   |
|                              | 6.1                   |        | 10     |        | $u_a/u_t:0.2$<br>$u_a/u_t:0.6$<br>$u_a/u_t:0.9$ |       |       |                       | 36% Pile<br>$u_a/u_t:0.2$ | 50% Pile<br>$u_a/u_t:0.6$ | 14% Pile<br>$u_a/u_t:0.9$ |                   |
|                              | (mph)                 | (m/s)  | (mph)  | (m/s)  |                                                 |       |       |                       |                           |                           |                           |                   |
| 21-Apr                       | 20                    | 8.941  | 21.298 | 9.521  | 0.190                                           | 0.571 | 0.857 | 0.000                 | 0.000                     | 0.000                     | 0.000                     | 0.00              |
| 22-Apr                       | 23                    | 10.282 | 24.492 | 10.949 | 0.219                                           | 0.657 | 0.985 | 0.010                 | 0.000                     | 0.000                     | 0.000                     | 0.00              |
| 23-Apr                       | 43                    | 19.223 | 45.790 | 20.470 | 0.409                                           | 1.228 | 1.842 | 1.150                 | 0.000                     | 0.000                     | 0.000                     | 0.00              |
| 24-Apr                       | 17                    | 7.600  | 18.103 | 8.093  | 0.162                                           | 0.486 | 0.728 | 0.000                 | 0.000                     | 0.000                     | 0.000                     | 0.00              |
| 25-Apr                       | 16                    | 7.153  | 17.038 | 7.617  | 0.152                                           | 0.457 | 0.686 | 0.000                 | 0.000                     | 0.000                     | 0.000                     | 0.00              |
| 26-Apr                       | 21                    | 9.388  | 22.363 | 9.997  | 0.200                                           | 0.600 | 0.900 | 0.049                 | 0.000                     | 0.000                     | 0.000                     | 0.00              |
| 27-Apr                       | 21                    | 9.388  | 22.363 | 9.997  | 0.200                                           | 0.600 | 0.900 | 1.810                 | 0.000                     | 0.000                     | 0.000                     | 0.00              |
| 28-Apr                       | 32                    | 14.305 | 34.076 | 15.234 | 0.305                                           | 0.914 | 1.371 | 0.340                 | 0.000                     | 0.000                     | 0.000                     | 0.00              |
| 29-Apr                       | 22                    | 9.835  | 23.428 | 10.473 | 0.209                                           | 0.628 | 0.943 | 0.000                 | 0.000                     | 0.000                     | 0.000                     | 0.00              |
| 30-Apr                       | 14                    | 6.259  | 14.908 | 6.665  | 0.133                                           | 0.400 | 0.600 | 0.000                 | 0.000                     | 0.000                     | 0.000                     | 0.00              |
| 01-May                       | 18                    | 8.047  | 19.168 | 8.569  | 0.171                                           | 0.514 | 0.771 | 0.000                 | 0.000                     | 0.000                     | 0.000                     | 0.00              |
| 02-May                       | 15                    | 6.706  | 15.973 | 7.141  | 0.143                                           | 0.428 | 0.643 | 0.000                 | 0.000                     | 0.000                     | 0.000                     | 0.00              |
| 03-May                       | 31                    | 13.858 | 33.012 | 14.758 | 0.295                                           | 0.885 | 1.328 | 0.020                 | 0.000                     | 0.000                     | 0.000                     | 0.00              |
| 04-May                       | 16                    | 7.153  | 17.038 | 7.617  | 0.152                                           | 0.457 | 0.686 | 0.000                 | 0.000                     | 0.000                     | 0.000                     | 0.00              |
| 05-May                       | 16                    | 7.153  | 17.038 | 7.617  | 0.152                                           | 0.457 | 0.686 | 0.000                 | 0.000                     | 0.000                     | 0.000                     | 0.00              |
| 06-May                       | 15                    | 6.706  | 15.973 | 7.141  | 0.143                                           | 0.428 | 0.643 | 0.000                 | 0.000                     | 0.000                     | 0.000                     | 0.00              |
| 07-May                       | 18                    | 8.047  | 19.168 | 8.569  | 0.171                                           | 0.514 | 0.771 | 0.000                 | 0.000                     | 0.000                     | 0.000                     | 0.00              |
| 08-May                       | 14                    | 6.259  | 14.908 | 6.665  | 0.133                                           | 0.400 | 0.600 | 0.000                 | 0.000                     | 0.000                     | 0.000                     | 0.00              |
| 09-May                       | 26                    | 11.623 | 27.687 | 12.377 | 0.248                                           | 0.743 | 1.114 | 0.000                 | 0.000                     | 0.000                     | 0.000                     | 0.00              |
| 10-May                       | 16                    | 7.153  | 17.038 | 7.617  | 0.152                                           | 0.457 | 0.686 | 0.000                 | 0.000                     | 0.000                     | 0.000                     | 0.00              |
| 11-May                       | 17                    | 7.600  | 18.103 | 8.093  | 0.162                                           | 0.486 | 0.728 | 0.000                 | 0.000                     | 0.000                     | 0.000                     | 0.00              |
| 12-May                       | 14                    | 6.259  | 14.908 | 6.665  | 0.133                                           | 0.400 | 0.600 | 0.780                 | 0.000                     | 0.000                     | 0.000                     | 0.00              |
| 13-May                       | 17                    | 7.600  | 18.103 | 8.093  | 0.162                                           | 0.486 | 0.728 | 0.000                 | 0.000                     | 0.000                     | 0.000                     | 0.00              |
| 14-May                       | 14                    | 6.259  | 14.908 | 6.665  | 0.133                                           | 0.400 | 0.600 | 0.000                 | 0.000                     | 0.000                     | 0.000                     | 0.00              |
| 15-May                       | 18                    | 8.047  | 19.168 | 8.569  | 0.171                                           | 0.514 | 0.771 | 0.005                 | 0.000                     | 0.000                     | 0.000                     | 0.00              |
| 16-May                       | 15                    | 6.706  | 15.973 | 7.141  | 0.143                                           | 0.428 | 0.643 | 0.000                 | 0.000                     | 0.000                     | 0.000                     | 0.00              |
| 17-May                       | 13                    | 5.812  | 13.844 | 6.189  | 0.124                                           | 0.371 | 0.557 | 0.000                 | 0.000                     | 0.000                     | 0.000                     | 0.00              |
| 18-May                       | 16                    | 7.153  | 17.038 | 7.617  | 0.152                                           | 0.457 | 0.686 | 0.000                 | 0.000                     | 0.000                     | 0.000                     | 0.00              |
| 19-May                       | 16                    | 7.153  | 17.038 | 7.617  | 0.152                                           | 0.457 | 0.686 | 0.005                 | 0.000                     | 0.000                     | 0.000                     | 0.00              |
| 20-May                       | 16                    | 7.153  | 17.038 | 7.617  | 0.152                                           | 0.457 | 0.686 | 0.005                 | 0.000                     | 0.000                     | 0.000                     | 0.00              |
| 21-May                       | 15                    | 6.706  | 15.973 | 7.141  | 0.143                                           | 0.428 | 0.643 | 0.000                 | 0.000                     | 0.000                     | 0.000                     | 0.00              |
| 22-May                       | 20                    | 8.941  | 21.298 | 9.521  | 0.190                                           | 0.571 | 0.857 | 0.000                 | 0.000                     | 0.000                     | 0.000                     | 0.00              |
| 23-May                       | 20                    | 8.941  | 21.298 | 9.521  | 0.190                                           | 0.571 | 0.857 | 0.000                 | 0.000                     | 0.000                     | 0.000                     | 0.00              |
| 24-May                       | 18                    | 8.047  | 19.168 | 8.569  | 0.171                                           | 0.514 | 0.771 | 0.300                 | 0.000                     | 0.000                     | 0.000                     | 0.00              |
| 25-May                       | 22                    | 9.835  | 23.428 | 10.473 | 0.209                                           | 0.628 | 0.943 | 0.550                 | 0.000                     | 0.000                     | 0.000                     | 0.00              |
| 26-May                       | 17                    | 7.600  | 18.103 | 8.093  | 0.162                                           | 0.486 | 0.728 | 0.005                 | 0.000                     | 0.000                     | 0.000                     | 0.00              |
| 27-May                       | 26                    | 11.623 | 27.687 | 12.377 | 0.248                                           | 0.743 | 1.114 | 1.270                 | 0.000                     | 0.000                     | 0.000                     | 0.00              |
| 28-May                       | 22                    | 9.835  | 23.428 | 10.473 | 0.209                                           | 0.628 | 0.943 | 0.050                 | 0.000                     | 0.000                     | 0.000                     | 0.00              |
| 29-May                       | 21                    | 9.388  | 22.363 | 9.997  | 0.200                                           | 0.600 | 0.900 | 0.010                 | 0.000                     | 0.000                     | 0.000                     | 0.00              |
| 30-May                       | 17                    | 7.600  | 18.103 | 8.093  | 0.162                                           | 0.486 | 0.728 | 0.000                 | 0.000                     | 0.000                     | 0.000                     | 0.00              |
| 31-May                       | 21                    | 9.388  | 22.363 | 9.997  | 0.200                                           | 0.600 | 0.900 | 0.450                 | 0.000                     | 0.000                     | 0.000                     | 0.00              |
| 01-Jun                       | 18                    | 8.047  | 19.168 | 8.569  | 0.171                                           | 0.514 | 0.771 | 0.830                 | 0.000                     | 0.000                     | 0.000                     | 0.00              |
| 02-Jun                       | 14                    | 6.259  | 14.908 | 6.665  | 0.133                                           | 0.400 | 0.600 | 0.030                 | 0.000                     | 0.000                     | 0.000                     | 0.00              |
| 03-Jun                       | 14                    | 6.259  | 14.908 | 6.665  | 0.133                                           | 0.400 | 0.600 | 0.000                 | 0.000                     | 0.000                     | 0.000                     | 0.00              |
| 04-Jun                       | 21                    | 9.388  | 22.363 | 9.997  | 0.200                                           | 0.600 | 0.900 | 0.000                 | 0.000                     | 0.000                     | 0.000                     | 0.00              |
| 05-Jun                       | 22                    | 9.835  | 23.428 | 10.473 | 0.209                                           | 0.628 | 0.943 | 0.850                 | 0.000                     | 0.000                     | 0.000                     | 0.00              |
| 06-Jun                       | 22                    | 9.835  | 23.428 | 10.473 | 0.209                                           | 0.628 | 0.943 | 0.060                 | 0.000                     | 0.000                     | 0.000                     | 0.00              |
| 07-Jun                       | 14                    | 6.259  | 14.908 | 6.665  | 0.133                                           | 0.400 | 0.600 | 0.005                 | 0.000                     | 0.000                     | 0.000                     | 0.00              |
| 08-Jun                       | 17                    | 7.600  | 18.103 | 8.093  | 0.162                                           | 0.486 | 0.728 | 0.000                 | 0.000                     | 0.000                     | 0.000                     | 0.00              |
| 09-Jun                       | 22                    | 9.835  | 23.428 | 10.473 | 0.209                                           | 0.628 | 0.943 | 0.010                 | 0.000                     | 0.000                     | 0.000                     | 0.00              |
| 10-Jun                       | 20                    | 8.941  | 21.298 | 9.521  | 0.190                                           | 0.571 | 0.857 | 0.000                 | 0.000                     | 0.000                     | 0.000                     | 0.00              |
| 11-Jun                       | 17                    | 7.600  | 18.103 | 8.093  | 0.162                                           | 0.486 | 0.728 | 0.005                 | 0.000                     | 0.000                     | 0.000                     | 0.00              |
| 12-Jun                       | 16                    | 7.153  | 17.038 | 7.617  | 0.152                                           | 0.457 | 0.686 | 0.320                 | 0.000                     | 0.000                     | 0.000                     | 0.00              |
| 13-Jun                       | 22                    | 9.835  | 23.428 | 10.473 | 0.209                                           | 0.628 | 0.943 | 0.005                 | 0.000                     | 0.000                     | 0.000                     | 0.00              |
| 14-Jun                       | 22                    | 9.835  | 23.428 | 10.473 | 0.209                                           | 0.628 | 0.943 | 0.230                 | 0.000                     | 0.000                     | 0.000                     | 0.00              |



**FOSTER WHEELER ENVIRONMENTAL CORPORATION**  
**CALCULATION SHEET - EXCEL 5.0**

**By:** E. Deken, PE  
**Date:** 10/23/98  
**Ch'd By:** Darrel J. Graziani, P.E.  
**Date:** 11/07/98

**Cal. No.:** 981023ED01  
**Rev. No.:** SJRPP 3  
**OFS:** 7830.0020.0054

**Project:** JEA St. Johns Power Park

**Subject:** Fugitive Emission Estimates - Wind Erosion Coal Storage Pile

**Assumptions:**

1. The threshold friction velocity was selected based on data available in AP-42, Section 13.2.5.
2. Roughness height was estimated based on largest values listed in AP-42, Section 13.2.5
3. Pile is always at maximum capacity which is maximizing emissions.

**References:**

1. AP-42, Section 13.2.5, Industrial Wind Erosion
2. 1997 Local Climatological Data, NOAA, National Climatic Data Center

**Erosion Potential Calculations**

Threshold Friction Velocity: **1.12**  
 Roughness Height (m): **0.003**

| Number of Disturbances | Fastest Mile Values   |          |          |          | Equivalent Friction Velocities |               |               | Rain Fall (inches) | Erosion Potential      |                        |                        | Emissions (lb) |
|------------------------|-----------------------|----------|----------|----------|--------------------------------|---------------|---------------|--------------------|------------------------|------------------------|------------------------|----------------|
|                        | Anemometer Height (m) |          |          |          | $u^*=0.1u^*$ (m/s)             |               |               |                    | (g/m^2)                |                        |                        |                |
|                        | 6.1 (mph)             | 10 (m/s) | 10 (mph) | 10 (m/s) | $u_r/u_r:0.2$                  | $u_r/u_r:0.6$ | $u_r/u_r:0.9$ |                    | 36% Pile $u_r/u_r:0.2$ | 50% Pile $u_r/u_r:0.6$ | 14% Pile $u_r/u_r:0.9$ |                |
| 15-Jun                 | 23                    | 10.282   | 24.492   | 10.949   | 0.219                          | 0.657         | 0.985         | 0.080              | 0.000                  | 0.000                  | 0.000                  | 0.00           |
| 16-Jun                 | 14                    | 6.259    | 14.908   | 6.665    | 0.133                          | 0.400         | 0.600         | 0.000              | 0.000                  | 0.000                  | 0.000                  | 0.00           |
| 17-Jun                 | 29                    | 12.964   | 30.882   | 13.805   | 0.276                          | 0.828         | 1.242         | 0.520              | 0.000                  | 0.000                  | 0.000                  | 0.00           |
| 18-Jun                 | 26                    | 11.623   | 27.687   | 12.377   | 0.248                          | 0.743         | 1.114         | 0.080              | 0.000                  | 0.000                  | 0.000                  | 0.00           |
| 19-Jun                 | 31                    | 13.858   | 33.012   | 14.758   | 0.295                          | 0.885         | 1.328         | 0.520              | 0.000                  | 0.000                  | 0.000                  | 0.00           |
| 20-Jun                 | 25                    | 11.176   | 26.622   | 11.901   | 0.238                          | 0.714         | 1.071         | 0.005              | 0.000                  | 0.000                  | 0.000                  | 0.00           |
| 21-Jun                 | 17                    | 7.600    | 18.103   | 8.093    | 0.162                          | 0.486         | 0.728         | 0.000              | 0.000                  | 0.000                  | 0.000                  | 0.00           |
| 22-Jun                 | 16                    | 7.153    | 17.038   | 7.617    | 0.152                          | 0.457         | 0.686         | 0.000              | 0.000                  | 0.000                  | 0.000                  | 0.00           |
| 23-Jun                 | 14                    | 6.259    | 14.908   | 6.665    | 0.133                          | 0.400         | 0.600         | 0.000              | 0.000                  | 0.000                  | 0.000                  | 0.00           |
| 24-Jun                 | 17                    | 7.600    | 18.103   | 8.093    | 0.162                          | 0.486         | 0.728         | 0.000              | 0.000                  | 0.000                  | 0.000                  | 0.00           |
| 25-Jun                 | 17                    | 7.600    | 18.103   | 8.093    | 0.162                          | 0.486         | 0.728         | 0.030              | 0.000                  | 0.000                  | 0.000                  | 0.00           |
| 26-Jun                 | 24                    | 10.729   | 25.557   | 11.425   | 0.229                          | 0.686         | 1.028         | 0.780              | 0.000                  | 0.000                  | 0.000                  | 0.00           |
| 27-Jun                 | 33                    | 14.752   | 35.141   | 15.710   | 0.314                          | 0.943         | 1.414         | 1.270              | 0.000                  | 0.000                  | 0.000                  | 0.00           |
| 28-Jun                 | 23                    | 10.282   | 24.492   | 10.949   | 0.219                          | 0.657         | 0.985         | 0.010              | 0.000                  | 0.000                  | 0.000                  | 0.00           |
| 29-Jun                 | 15                    | 6.706    | 15.973   | 7.141    | 0.143                          | 0.428         | 0.643         | 0.020              | 0.000                  | 0.000                  | 0.000                  | 0.00           |
| 30-Jun                 | 20                    | 8.941    | 21.298   | 9.521    | 0.190                          | 0.571         | 0.857         | 3.690              | 0.000                  | 0.000                  | 0.000                  | 0.00           |
| 01-Jul                 | 22                    | 9.835    | 23.428   | 10.473   | 0.209                          | 0.628         | 0.943         | 0.040              | 0.000                  | 0.000                  | 0.000                  | 0.00           |
| 02-Jul                 | 14                    | 6.259    | 14.908   | 6.665    | 0.133                          | 0.400         | 0.600         | 0.000              | 0.000                  | 0.000                  | 0.000                  | 0.00           |
| 03-Jul                 | 13                    | 5.812    | 13.844   | 6.189    | 0.124                          | 0.371         | 0.557         | 0.000              | 0.000                  | 0.000                  | 0.000                  | 0.00           |
| 04-Jul                 | 22                    | 9.835    | 23.428   | 10.473   | 0.209                          | 0.628         | 0.943         | 0.150              | 0.000                  | 0.000                  | 0.000                  | 0.00           |
| 05-Jul                 | 38                    | 16.988   | 40.466   | 18.090   | 0.362                          | 1.085         | 1.628         | 0.610              | 0.000                  | 0.000                  | 0.000                  | 0.00           |
| 06-Jul                 | 29                    | 12.964   | 30.882   | 13.805   | 0.276                          | 0.828         | 1.242         | 1.970              | 0.000                  | 0.000                  | 0.000                  | 0.00           |
| 07-Jul                 | 21                    | 9.388    | 22.363   | 9.997    | 0.200                          | 0.600         | 0.900         | 0.700              | 0.000                  | 0.000                  | 0.000                  | 0.00           |
| 08-Jul                 | 16                    | 7.153    | 17.038   | 7.617    | 0.152                          | 0.457         | 0.686         | 0.005              | 0.000                  | 0.000                  | 0.000                  | 0.00           |
| 09-Jul                 | 16                    | 7.153    | 17.038   | 7.617    | 0.152                          | 0.457         | 0.686         | 0.040              | 0.000                  | 0.000                  | 0.000                  | 0.00           |
| 10-Jul                 | 16                    | 7.153    | 17.038   | 7.617    | 0.152                          | 0.457         | 0.686         | 0.000              | 0.000                  | 0.000                  | 0.000                  | 0.00           |
| 11-Jul                 | 20                    | 8.941    | 21.298   | 9.521    | 0.190                          | 0.571         | 0.857         | 0.900              | 0.000                  | 0.000                  | 0.000                  | 0.00           |
| 12-Jul                 | 16                    | 7.153    | 17.038   | 7.617    | 0.152                          | 0.457         | 0.686         | 0.450              | 0.000                  | 0.000                  | 0.000                  | 0.00           |
| 13-Jul                 | 14                    | 6.259    | 14.908   | 6.665    | 0.133                          | 0.400         | 0.600         | 0.000              | 0.000                  | 0.000                  | 0.000                  | 0.00           |
| 14-Jul                 | 14                    | 6.259    | 14.908   | 6.665    | 0.133                          | 0.400         | 0.600         | 0.000              | 0.000                  | 0.000                  | 0.000                  | 0.00           |
| 15-Jul                 | 15                    | 6.706    | 15.973   | 7.141    | 0.143                          | 0.428         | 0.643         | 0.000              | 0.000                  | 0.000                  | 0.000                  | 0.00           |
| 16-Jul                 | 24                    | 10.729   | 25.557   | 11.425   | 0.229                          | 0.686         | 1.028         | 0.005              | 0.000                  | 0.000                  | 0.000                  | 0.00           |
| 17-Jul                 | 20                    | 8.941    | 21.298   | 9.521    | 0.190                          | 0.571         | 0.857         | 0.020              | 0.000                  | 0.000                  | 0.000                  | 0.00           |
| 18-Jul                 | 28                    | 12.517   | 29.817   | 13.329   | 0.267                          | 0.800         | 1.200         | 0.005              | 0.000                  | 0.000                  | 2.359                  | 63.29          |
| 19-Jul                 | 22                    | 9.835    | 23.428   | 10.473   | 0.209                          | 0.628         | 0.943         | 0.005              | 0.000                  | 0.000                  | 0.000                  | 0.00           |
| 20-Jul                 | 23                    | 10.282   | 24.492   | 10.949   | 0.219                          | 0.657         | 0.985         | 0.010              | 0.000                  | 0.000                  | 0.000                  | 0.00           |
| 21-Jul                 | 16                    | 7.153    | 17.038   | 7.617    | 0.152                          | 0.457         | 0.686         | 0.260              | 0.000                  | 0.000                  | 0.000                  | 0.00           |
| 22-Jul                 | 17                    | 7.600    | 18.103   | 8.093    | 0.162                          | 0.486         | 0.728         | 0.000              | 0.000                  | 0.000                  | 0.000                  | 0.00           |
| 23-Jul                 | 22                    | 9.835    | 23.428   | 10.473   | 0.209                          | 0.628         | 0.943         | 0.010              | 0.000                  | 0.000                  | 0.000                  | 0.00           |
| 24-Jul                 | 14                    | 6.259    | 14.908   | 6.665    | 0.133                          | 0.400         | 0.600         | 0.140              | 0.000                  | 0.000                  | 0.000                  | 0.00           |
| 25-Jul                 | 24                    | 10.729   | 25.557   | 11.425   | 0.229                          | 0.686         | 1.028         | 1.060              | 0.000                  | 0.000                  | 0.000                  | 0.00           |
| 26-Jul                 | 23                    | 10.282   | 24.492   | 10.949   | 0.219                          | 0.657         | 0.985         | 0.010              | 0.000                  | 0.000                  | 0.000                  | 0.00           |
| 27-Jul                 | 18                    | 8.047    | 19.168   | 8.569    | 0.171                          | 0.514         | 0.771         | 0.160              | 0.000                  | 0.000                  | 0.000                  | 0.00           |
| 28-Jul                 | 16                    | 7.153    | 17.038   | 7.617    | 0.152                          | 0.457         | 0.686         | 0.000              | 0.000                  | 0.000                  | 0.000                  | 0.00           |
| 29-Jul                 | 18                    | 8.047    | 19.168   | 8.569    | 0.171                          | 0.514         | 0.771         | 0.000              | 0.000                  | 0.000                  | 0.000                  | 0.00           |
| 30-Jul                 | 16                    | 7.153    | 17.038   | 7.617    | 0.152                          | 0.457         | 0.686         | 0.160              | 0.000                  | 0.000                  | 0.000                  | 0.00           |
| 31-Jul                 | 16                    | 7.153    | 17.038   | 7.617    | 0.152                          | 0.457         | 0.686         | 1.000              | 0.000                  | 0.000                  | 0.000                  | 0.00           |
| 01-Aug                 | 21                    | 9.388    | 22.363   | 9.997    | 0.200                          | 0.600         | 0.900         | 3.730              | 0.000                  | 0.000                  | 0.000                  | 0.00           |
| 02-Aug                 | 20                    | 8.941    | 21.298   | 9.521    | 0.190                          | 0.571         | 0.857         | 0.500              | 0.000                  | 0.000                  | 0.000                  | 0.00           |
| 03-Aug                 | 24                    | 10.729   | 25.557   | 11.425   | 0.229                          | 0.686         | 1.028         | 0.160              | 0.000                  | 0.000                  | 0.000                  | 0.00           |
| 04-Aug                 | 16                    | 7.153    | 17.038   | 7.617    | 0.152                          | 0.457         | 0.686         | 0.000              | 0.000                  | 0.000                  | 0.000                  | 0.00           |
| 05-Aug                 | 13                    | 5.812    | 13.844   | 6.189    | 0.124                          | 0.371         | 0.557         | 0.000              | 0.000                  | 0.000                  | 0.000                  | 0.00           |
| 06-Aug                 | 21                    | 9.388    | 22.363   | 9.997    | 0.200                          | 0.600         | 0.900         | 0.010              | 0.000                  | 0.000                  | 0.000                  | 0.00           |
| 07-Aug                 | 18                    | 8.047    | 19.168   | 8.569    | 0.171                          | 0.514         | 0.771         | 0.010              | 0.000                  | 0.000                  | 0.000                  | 0.00           |
| 08-Aug                 | 20                    | 8.941    | 21.298   | 9.521    | 0.190                          | 0.571         | 0.857         | 0.060              | 0.000                  | 0.000                  | 0.000                  | 0.00           |

**FOSTER WHEELER ENVIRONMENTAL CORPORATION**  
**CALCULATION SHEET - EXCEL 5.0**

**By:** E. Deken, PE  
**Date:** 10/23/98  
**Ch'd By:** Darrel J. Graziani, P.E.  
**Date:** 11/07/98

**Cal. No.:** 981023ED01  
**Rev. No.:** SJRPP 3  
**OFS:** 7830.0020.0054

**Project:** JEA St. Johns Power Park

**Subject:** Fugitive Emission Estimates - Wind Erosion Coal Storage Pile

**Assumptions:**

1. The threshold friction velocity was selected based on data available in AP-42, Section 13.2.5.
2. Roughness height was estimated based on largest values listed in AP-42, Section 13.2.5
3. Pile is always at maximum capacity which is maximizing emissions.

**References:**

1. AP-42, Section 13.2.5, Industrial Wind Erosion
2. 1997 Local Climatological Data, NOAA, National Climatic Data Center

**Erosion Potential Calculations**

Threshold Friction Velocity: **1.12**  
 Roughness Height (m) **0.003**

| Number<br>of<br>Disturbances | Fastest Mile Values<br>Anemometer Height (m) |        |        |        | Equivalent Friction Velocities<br>$u^*=0.1u^*$ |               |               | Rain Fall<br>(inches) | Erosion Potential<br>(g/m^2) |                           |                           | Emissions<br>(lb) |
|------------------------------|----------------------------------------------|--------|--------|--------|------------------------------------------------|---------------|---------------|-----------------------|------------------------------|---------------------------|---------------------------|-------------------|
|                              | 6.1                                          |        | 10     |        | (m/s)                                          |               |               |                       | (g/m^2)                      |                           |                           |                   |
|                              | (mph)                                        | (m/s)  | (mph)  | (m/s)  | $u_s/u_t:0.2$                                  | $u_s/u_t:0.6$ | $u_s/u_t:0.9$ |                       | 36% Pile<br>$u_s/u_t:0.2$    | 50% Pile<br>$u_s/u_t:0.6$ | 14% Pile<br>$u_s/u_t:0.9$ |                   |
| 09-Aug                       | 17                                           | 7.600  | 18.103 | 8.093  | 0.162                                          | 0.486         | 0.728         | 0.020                 | 0.000                        | 0.000                     | 0.000                     | 0.00              |
| 10-Aug                       | 17                                           | 7.600  | 18.103 | 8.093  | 0.162                                          | 0.486         | 0.728         | 0.220                 | 0.000                        | 0.000                     | 0.000                     | 0.00              |
| 11-Aug                       | 15                                           | 6.706  | 15.973 | 7.141  | 0.143                                          | 0.428         | 0.643         | 0.005                 | 0.000                        | 0.000                     | 0.000                     | 0.00              |
| 12-Aug                       | 15                                           | 6.706  | 15.973 | 7.141  | 0.143                                          | 0.428         | 0.643         | 0.000                 | 0.000                        | 0.000                     | 0.000                     | 0.00              |
| 13-Aug                       | 15                                           | 6.706  | 15.973 | 7.141  | 0.143                                          | 0.428         | 0.643         | 0.450                 | 0.000                        | 0.000                     | 0.000                     | 0.00              |
| 14-Aug                       | 13                                           | 5.812  | 13.844 | 6.189  | 0.124                                          | 0.371         | 0.557         | 0.010                 | 0.000                        | 0.000                     | 0.000                     | 0.00              |
| 15-Aug                       | 23                                           | 10.282 | 24.492 | 10.949 | 0.219                                          | 0.657         | 0.985         | 0.005                 | 0.000                        | 0.000                     | 0.000                     | 0.00              |
| 16-Aug                       | 30                                           | 13.411 | 31.947 | 14.281 | 0.286                                          | 0.857         | 1.285         | 0.710                 | 0.000                        | 0.000                     | 0.000                     | 0.00              |
| 17-Aug                       | 14                                           | 6.259  | 14.908 | 6.665  | 0.133                                          | 0.400         | 0.600         | 0.000                 | 0.000                        | 0.000                     | 0.000                     | 0.00              |
| 18-Aug                       | 26                                           | 11.623 | 27.687 | 12.377 | 0.248                                          | 0.743         | 1.114         | 0.270                 | 0.000                        | 0.000                     | 0.000                     | 0.00              |
| 19-Aug                       | 16                                           | 7.153  | 17.038 | 7.617  | 0.152                                          | 0.457         | 0.686         | 0.240                 | 0.000                        | 0.000                     | 0.000                     | 0.00              |
| 20-Aug                       | 17                                           | 7.600  | 18.103 | 8.093  | 0.162                                          | 0.486         | 0.728         | 0.000                 | 0.000                        | 0.000                     | 0.000                     | 0.00              |
| 21-Aug                       | 21                                           | 9.388  | 22.363 | 9.997  | 0.200                                          | 0.600         | 0.900         | 0.160                 | 0.000                        | 0.000                     | 0.000                     | 0.00              |
| 22-Aug                       | 15                                           | 6.706  | 15.973 | 7.141  | 0.143                                          | 0.428         | 0.643         | 0.000                 | 0.000                        | 0.000                     | 0.000                     | 0.00              |
| 23-Aug                       | 21                                           | 9.388  | 22.363 | 9.997  | 0.200                                          | 0.600         | 0.900         | 0.020                 | 0.000                        | 0.000                     | 0.000                     | 0.00              |
| 24-Aug                       | 29                                           | 12.964 | 30.882 | 13.805 | 0.276                                          | 0.828         | 1.242         | 1.590                 | 0.000                        | 0.000                     | 0.000                     | 0.00              |
| 25-Aug                       | 18                                           | 8.047  | 19.168 | 8.569  | 0.171                                          | 0.514         | 0.771         | 0.000                 | 0.000                        | 0.000                     | 0.000                     | 0.00              |
| 26-Aug                       | 20                                           | 8.941  | 21.298 | 9.521  | 0.190                                          | 0.571         | 0.857         | 0.000                 | 0.000                        | 0.000                     | 0.000                     | 0.00              |
| 27-Aug                       | 11                                           | 4.917  | 11.714 | 5.237  | 0.105                                          | 0.314         | 0.471         | 0.000                 | 0.000                        | 0.000                     | 0.000                     | 0.00              |
| 28-Aug                       | 16                                           | 7.153  | 17.038 | 7.617  | 0.152                                          | 0.457         | 0.686         | 0.000                 | 0.000                        | 0.000                     | 0.000                     | 0.00              |
| 29-Aug                       | 17                                           | 7.600  | 18.103 | 8.093  | 0.162                                          | 0.486         | 0.728         | 0.000                 | 0.000                        | 0.000                     | 0.000                     | 0.00              |
| 30-Aug                       | 21                                           | 9.388  | 22.363 | 9.997  | 0.200                                          | 0.600         | 0.900         | 0.080                 | 0.000                        | 0.000                     | 0.000                     | 0.00              |
| 31-Aug                       | 16                                           | 7.153  | 17.038 | 7.617  | 0.152                                          | 0.457         | 0.686         | 0.000                 | 0.000                        | 0.000                     | 0.000                     | 0.00              |
| 01-Sep                       | 21                                           | 9.388  | 22.363 | 9.997  | 0.200                                          | 0.600         | 0.900         | 0.005                 | 0.000                        | 0.000                     | 0.000                     | 0.00              |
| 02-Sep                       | 16                                           | 7.153  | 17.038 | 7.617  | 0.152                                          | 0.457         | 0.686         | 0.130                 | 0.000                        | 0.000                     | 0.000                     | 0.00              |
| 03-Sep                       | 11                                           | 4.917  | 11.714 | 5.237  | 0.105                                          | 0.314         | 0.471         | 0.000                 | 0.000                        | 0.000                     | 0.000                     | 0.00              |
| 04-Sep                       | 26                                           | 11.623 | 27.687 | 12.377 | 0.248                                          | 0.743         | 1.114         | 0.005                 | 0.000                        | 0.000                     | 0.000                     | 0.00              |
| 05-Sep                       | 21                                           | 9.388  | 22.363 | 9.997  | 0.200                                          | 0.600         | 0.900         | 0.000                 | 0.000                        | 0.000                     | 0.000                     | 0.00              |
| 06-Sep                       | 18                                           | 8.047  | 19.168 | 8.569  | 0.171                                          | 0.514         | 0.771         | 0.000                 | 0.000                        | 0.000                     | 0.000                     | 0.00              |
| 07-Sep                       | 16                                           | 7.153  | 17.038 | 7.617  | 0.152                                          | 0.457         | 0.686         | 0.000                 | 0.000                        | 0.000                     | 0.000                     | 0.00              |
| 08-Sep                       | 14                                           | 6.259  | 14.908 | 6.665  | 0.133                                          | 0.400         | 0.600         | 0.000                 | 0.000                        | 0.000                     | 0.000                     | 0.00              |
| 09-Sep                       | 14                                           | 6.259  | 14.908 | 6.665  | 0.133                                          | 0.400         | 0.600         | 0.000                 | 0.000                        | 0.000                     | 0.000                     | 0.00              |
| 10-Sep                       | 17                                           | 7.600  | 18.103 | 8.093  | 0.162                                          | 0.486         | 0.728         | 0.005                 | 0.000                        | 0.000                     | 0.000                     | 0.00              |
| 11-Sep                       | 15                                           | 6.706  | 15.973 | 7.141  | 0.143                                          | 0.428         | 0.643         | 0.000                 | 0.000                        | 0.000                     | 0.000                     | 0.00              |
| 12-Sep                       | 14                                           | 6.259  | 14.908 | 6.665  | 0.133                                          | 0.400         | 0.600         | 0.000                 | 0.000                        | 0.000                     | 0.000                     | 0.00              |
| 13-Sep                       | 14                                           | 6.259  | 14.908 | 6.665  | 0.133                                          | 0.400         | 0.600         | 0.000                 | 0.000                        | 0.000                     | 0.000                     | 0.00              |
| 14-Sep                       | 20                                           | 8.941  | 21.298 | 9.521  | 0.190                                          | 0.571         | 0.857         | 0.030                 | 0.000                        | 0.000                     | 0.000                     | 0.00              |
| 15-Sep                       | 14                                           | 6.259  | 14.908 | 6.665  | 0.133                                          | 0.400         | 0.600         | 0.000                 | 0.000                        | 0.000                     | 0.000                     | 0.00              |
| 16-Sep                       | 14                                           | 6.259  | 14.908 | 6.665  | 0.133                                          | 0.400         | 0.600         | 0.000                 | 0.000                        | 0.000                     | 0.000                     | 0.00              |
| 17-Sep                       | 16                                           | 7.153  | 17.038 | 7.617  | 0.152                                          | 0.457         | 0.686         | 0.000                 | 0.000                        | 0.000                     | 0.000                     | 0.00              |
| 18-Sep                       | 11                                           | 4.917  | 11.714 | 5.237  | 0.105                                          | 0.314         | 0.471         | 0.000                 | 0.000                        | 0.000                     | 0.000                     | 0.00              |
| 19-Sep                       | 14                                           | 6.259  | 14.908 | 6.665  | 0.133                                          | 0.400         | 0.600         | 0.000                 | 0.000                        | 0.000                     | 0.000                     | 0.00              |
| 20-Sep                       | 11                                           | 4.917  | 11.714 | 5.237  | 0.105                                          | 0.314         | 0.471         | 0.000                 | 0.000                        | 0.000                     | 0.000                     | 0.00              |
| 21-Sep                       | 16                                           | 7.153  | 17.038 | 7.617  | 0.152                                          | 0.457         | 0.686         | 0.000                 | 0.000                        | 0.000                     | 0.000                     | 0.00              |
| 22-Sep                       | 17                                           | 7.600  | 18.103 | 8.093  | 0.162                                          | 0.486         | 0.728         | 0.000                 | 0.000                        | 0.000                     | 0.000                     | 0.00              |
| 23-Sep                       | 20                                           | 8.941  | 21.298 | 9.521  | 0.190                                          | 0.571         | 0.857         | 0.180                 | 0.000                        | 0.000                     | 0.000                     | 0.00              |
| 24-Sep                       | 14                                           | 6.259  | 14.908 | 6.665  | 0.133                                          | 0.400         | 0.600         | 1.000                 | 0.000                        | 0.000                     | 0.000                     | 0.00              |
| 25-Sep                       | 23                                           | 10.282 | 24.492 | 10.949 | 0.219                                          | 0.657         | 0.985         | 0.280                 | 0.000                        | 0.000                     | 0.000                     | 0.00              |
| 26-Sep                       | 16                                           | 7.153  | 17.038 | 7.617  | 0.152                                          | 0.457         | 0.686         | 1.080                 | 0.000                        | 0.000                     | 0.000                     | 0.00              |
| 27-Sep                       | 7                                            | 3.129  | 7.454  | 3.332  | 0.067                                          | 0.200         | 0.300         | 2.250                 | 0.000                        | 0.000                     | 0.000                     | 0.00              |
| 28-Sep                       | 15                                           | 6.706  | 15.973 | 7.141  | 0.143                                          | 0.428         | 0.643         | 0.010                 | 0.000                        | 0.000                     | 0.000                     | 0.00              |
| 29-Sep                       | 16                                           | 7.153  | 17.038 | 7.617  | 0.152                                          | 0.457         | 0.686         | 0.000                 | 0.000                        | 0.000                     | 0.000                     | 0.00              |
| 30-Sep                       | 17                                           | 7.600  | 18.103 | 8.093  | 0.162                                          | 0.486         | 0.728         | 0.000                 | 0.000                        | 0.000                     | 0.000                     | 0.00              |
| 01-Oct                       | 17                                           | 7.600  | 18.103 | 8.093  | 0.162                                          | 0.486         | 0.728         | 0.000                 | 0.000                        | 0.000                     | 0.000                     | 0.00              |
| 02-Oct                       | 23                                           | 10.282 | 24.492 | 10.949 | 0.219                                          | 0.657         | 0.985         | 0.000                 | 0.000                        | 0.000                     | 0.000                     | 0.00              |

**FOSTER WHEELER ENVIRONMENTAL CORPORATION**  
**CALCULATION SHEET - EXCEL 5.0**

**By:** E. Deken, PE  
**Date:** 10/23/98  
**Ch'd By:** Darrel J. Graziani, P.E.  
**Date:** 11/07/98

**Cal. No.:** 981023ED01  
**Rev. No.:** SJRPP 3  
**OFS:** 7830.0020.0054

**Project:** JEA St. Johns Power Park

**Subject:** Fugitive Emission Estimates - Wind Erosion Coal Storage Pile

**Assumptions:**

1. The threshold friction velocity was selected based on data available in AP-42, Section 13.2.5.
2. Roughness height was estimated based on largest values listed in AP-42, Section 13.2.5
3. Pile is always at maximum capacity which is maximizing emissions.

**References:**

1. AP-42, Section 13.2.5, Industrial Wind Erosion
2. 1997 Local Climatological Data, NOAA, National Climatic Data Center

**Erosion Potential Calculations**

Threshold Friction Velocity: **1.12**  
 Roughness Height (m) **0.003**

| Number<br>of<br>Disturbances | Fastest Mile Values   |        |        |        | Equivalent Friction Velocities      |                                     |                                     | Rain Fall<br>(Inches) | Erosion Potential                   |                                     |                                     | Emissions |
|------------------------------|-----------------------|--------|--------|--------|-------------------------------------|-------------------------------------|-------------------------------------|-----------------------|-------------------------------------|-------------------------------------|-------------------------------------|-----------|
|                              | Anemometer Height (m) |        |        |        | u* = 0.1u'                          |                                     |                                     |                       | (g/m²)                              |                                     |                                     |           |
|                              | 6:1                   |        | 10     |        | (m/s)                               |                                     |                                     |                       | 36% Pile                            | 50% Pile                            | 14% Pile                            |           |
|                              | (mph)                 | (m/s)  | (mph)  | (m/s)  | u <sub>s</sub> /u <sub>*</sub> :0.2 | u <sub>s</sub> /u <sub>*</sub> :0.6 | u <sub>s</sub> /u <sub>*</sub> :0.9 |                       | u <sub>s</sub> /u <sub>*</sub> :0.2 | u <sub>s</sub> /u <sub>*</sub> :0.6 | u <sub>s</sub> /u <sub>*</sub> :0.9 | (lb)      |
| 03-Oct                       | 17                    | 7.600  | 18.103 | 8.093  | 0.162                               | 0.486                               | 0.728                               | 0.005                 | 0.000                               | 0.000                               | 0.000                               | 0.00      |
| 04-Oct                       | 21                    | 9.388  | 22.363 | 9.997  | 0.200                               | 0.600                               | 0.900                               | 0.005                 | 0.000                               | 0.000                               | 0.000                               | 0.00      |
| 05-Oct                       | 20                    | 8.941  | 21.298 | 9.521  | 0.190                               | 0.571                               | 0.857                               | 0.000                 | 0.000                               | 0.000                               | 0.000                               | 0.00      |
| 06-Oct                       | 15                    | 6.706  | 15.973 | 7.141  | 0.143                               | 0.428                               | 0.643                               | 0.000                 | 0.000                               | 0.000                               | 0.000                               | 0.00      |
| 07-Oct                       | 18                    | 8.047  | 19.168 | 8.569  | 0.171                               | 0.514                               | 0.771                               | 0.000                 | 0.000                               | 0.000                               | 0.000                               | 0.00      |
| 08-Oct                       | 21                    | 9.388  | 22.363 | 9.997  | 0.200                               | 0.600                               | 0.900                               | 0.005                 | 0.000                               | 0.000                               | 0.000                               | 0.00      |
| 09-Oct                       | 23                    | 10.282 | 24.492 | 10.949 | 0.219                               | 0.657                               | 0.985                               | 0.170                 | 0.000                               | 0.000                               | 0.000                               | 0.00      |
| 10-Oct                       | 21                    | 9.388  | 22.363 | 9.997  | 0.200                               | 0.600                               | 0.900                               | 0.000                 | 0.000                               | 0.000                               | 0.000                               | 0.00      |
| 11-Oct                       | 20                    | 8.941  | 21.298 | 9.521  | 0.190                               | 0.571                               | 0.857                               | 0.090                 | 0.000                               | 0.000                               | 0.000                               | 0.00      |
| 12-Oct                       | 20                    | 8.941  | 21.298 | 9.521  | 0.190                               | 0.571                               | 0.857                               | 0.050                 | 0.000                               | 0.000                               | 0.000                               | 0.00      |
| 13-Oct                       | 15                    | 6.706  | 15.973 | 7.141  | 0.143                               | 0.428                               | 0.643                               | 0.005                 | 0.000                               | 0.000                               | 0.000                               | 0.00      |
| 14-Oct                       | 13                    | 5.812  | 13.844 | 6.189  | 0.124                               | 0.371                               | 0.557                               | 0.000                 | 0.000                               | 0.000                               | 0.000                               | 0.00      |
| 15-Oct                       | 15                    | 6.706  | 15.973 | 7.141  | 0.143                               | 0.428                               | 0.643                               | 0.240                 | 0.000                               | 0.000                               | 0.000                               | 0.00      |
| 16-Oct                       | 16                    | 7.153  | 17.038 | 7.617  | 0.152                               | 0.457                               | 0.686                               | 0.050                 | 0.000                               | 0.000                               | 0.000                               | 0.00      |
| 17-Oct                       | 11                    | 4.917  | 11.714 | 5.237  | 0.105                               | 0.314                               | 0.471                               | 0.000                 | 0.000                               | 0.000                               | 0.000                               | 0.00      |
| 18-Oct                       | 14                    | 6.259  | 14.908 | 6.665  | 0.133                               | 0.400                               | 0.600                               | 0.050                 | 0.000                               | 0.000                               | 0.000                               | 0.00      |
| 19-Oct                       | 20                    | 8.941  | 21.298 | 9.521  | 0.190                               | 0.571                               | 0.857                               | 0.000                 | 0.000                               | 0.000                               | 0.000                               | 0.00      |
| 20-Oct                       | 15                    | 6.706  | 15.973 | 7.141  | 0.143                               | 0.428                               | 0.643                               | 0.000                 | 0.000                               | 0.000                               | 0.000                               | 0.00      |
| 21-Oct                       | 10                    | 4.470  | 10.649 | 4.760  | 0.095                               | 0.286                               | 0.428                               | 0.000                 | 0.000                               | 0.000                               | 0.000                               | 0.00      |
| 22-Oct                       | 14                    | 6.259  | 14.908 | 6.665  | 0.133                               | 0.400                               | 0.600                               | 0.000                 | 0.000                               | 0.000                               | 0.000                               | 0.00      |
| 23-Oct                       | 14                    | 6.259  | 14.908 | 6.665  | 0.133                               | 0.400                               | 0.600                               | 0.000                 | 0.000                               | 0.000                               | 0.000                               | 0.00      |
| 24-Oct                       | 20                    | 8.941  | 21.298 | 9.521  | 0.190                               | 0.571                               | 0.857                               | 0.290                 | 0.000                               | 0.000                               | 0.000                               | 0.00      |
| 25-Oct                       | 11                    | 4.917  | 11.714 | 5.237  | 0.105                               | 0.314                               | 0.471                               | 0.000                 | 0.000                               | 0.000                               | 0.000                               | 0.00      |
| 26-Oct                       | 22                    | 9.835  | 23.428 | 10.473 | 0.209                               | 0.628                               | 0.943                               | 0.580                 | 0.000                               | 0.000                               | 0.000                               | 0.00      |
| 27-Oct                       | 22                    | 9.835  | 23.428 | 10.473 | 0.209                               | 0.628                               | 0.943                               | 2.640                 | 0.000                               | 0.000                               | 0.000                               | 0.00      |
| 28-Oct                       | 14                    | 6.259  | 14.908 | 6.665  | 0.133                               | 0.400                               | 0.600                               | 0.000                 | 0.000                               | 0.000                               | 0.000                               | 0.00      |
| 29-Oct                       | 10                    | 4.470  | 10.649 | 4.760  | 0.095                               | 0.286                               | 0.428                               | 0.000                 | 0.000                               | 0.000                               | 0.000                               | 0.00      |
| 30-Oct                       | 13                    | 5.812  | 13.844 | 6.189  | 0.124                               | 0.371                               | 0.557                               | 0.000                 | 0.000                               | 0.000                               | 0.000                               | 0.00      |
| 31-Oct                       | 13                    | 5.812  | 13.844 | 6.189  | 0.124                               | 0.371                               | 0.557                               | 0.680                 | 0.000                               | 0.000                               | 0.000                               | 0.00      |
| 01-Nov                       | 16                    | 7.153  | 17.038 | 7.617  | 0.152                               | 0.457                               | 0.686                               | 0.000                 | 0.000                               | 0.000                               | 0.000                               | 0.00      |
| 02-Nov                       | 21                    | 9.388  | 22.363 | 9.997  | 0.200                               | 0.600                               | 0.900                               | 0.180                 | 0.000                               | 0.000                               | 0.000                               | 0.00      |
| 03-Nov                       | 21                    | 9.388  | 22.363 | 9.997  | 0.200                               | 0.600                               | 0.900                               | 0.000                 | 0.000                               | 0.000                               | 0.000                               | 0.00      |
| 04-Nov                       | 14                    | 6.259  | 14.908 | 6.665  | 0.133                               | 0.400                               | 0.600                               | 0.000                 | 0.000                               | 0.000                               | 0.000                               | 0.00      |
| 05-Nov                       | 17                    | 7.600  | 18.103 | 8.093  | 0.162                               | 0.486                               | 0.728                               | 0.000                 | 0.000                               | 0.000                               | 0.000                               | 0.00      |
| 06-Nov                       | 11                    | 4.917  | 11.714 | 5.237  | 0.105                               | 0.314                               | 0.471                               | 0.005                 | 0.000                               | 0.000                               | 0.000                               | 0.00      |
| 07-Nov                       | 17                    | 7.600  | 18.103 | 8.093  | 0.162                               | 0.486                               | 0.728                               | 0.150                 | 0.000                               | 0.000                               | 0.000                               | 0.00      |
| 08-Nov                       | 18                    | 8.047  | 19.168 | 8.569  | 0.171                               | 0.514                               | 0.771                               | 0.000                 | 0.000                               | 0.000                               | 0.000                               | 0.00      |
| 09-Nov                       | 15                    | 6.706  | 15.973 | 7.141  | 0.143                               | 0.428                               | 0.643                               | 0.000                 | 0.000                               | 0.000                               | 0.000                               | 0.00      |
| 10-Nov                       | 16                    | 7.153  | 17.038 | 7.617  | 0.152                               | 0.457                               | 0.686                               | 0.000                 | 0.000                               | 0.000                               | 0.000                               | 0.00      |
| 11-Nov                       | 13                    | 5.812  | 13.844 | 6.189  | 0.124                               | 0.371                               | 0.557                               | 0.000                 | 0.000                               | 0.000                               | 0.000                               | 0.00      |
| 12-Nov                       | 15                    | 6.706  | 15.973 | 7.141  | 0.143                               | 0.428                               | 0.643                               | 0.280                 | 0.000                               | 0.000                               | 0.000                               | 0.00      |
| 13-Nov                       | 16                    | 7.153  | 17.038 | 7.617  | 0.152                               | 0.457                               | 0.686                               | 0.650                 | 0.000                               | 0.000                               | 0.000                               | 0.00      |
| 14-Nov                       | 28                    | 12.517 | 29.817 | 13.329 | 0.267                               | 0.800                               | 1.200                               | 0.000                 | 0.000                               | 0.000                               | 2.359                               | 63.29     |
| 15-Nov                       | 13                    | 5.812  | 13.844 | 6.189  | 0.124                               | 0.371                               | 0.557                               | 0.000                 | 0.000                               | 0.000                               | 0.000                               | 0.00      |
| 16-Nov                       | 14                    | 6.259  | 14.908 | 6.665  | 0.133                               | 0.400                               | 0.600                               | 0.005                 | 0.000                               | 0.000                               | 0.000                               | 0.00      |
| 17-Nov                       | 15                    | 6.706  | 15.973 | 7.141  | 0.143                               | 0.428                               | 0.643                               | 0.000                 | 0.000                               | 0.000                               | 0.000                               | 0.00      |
| 18-Nov                       | 13                    | 5.812  | 13.844 | 6.189  | 0.124                               | 0.371                               | 0.557                               | 0.000                 | 0.000                               | 0.000                               | 0.000                               | 0.00      |
| 19-Nov                       | 8                     | 3.576  | 8.519  | 3.808  | 0.076                               | 0.229                               | 0.343                               | 0.005                 | 0.000                               | 0.000                               | 0.000                               | 0.00      |
| 20-Nov                       | 14                    | 6.259  | 14.908 | 6.665  | 0.133                               | 0.400                               | 0.600                               | 0.000                 | 0.000                               | 0.000                               | 0.000                               | 0.00      |
| 21-Nov                       | 14                    | 6.259  | 14.908 | 6.665  | 0.133                               | 0.400                               | 0.600                               | 0.000                 | 0.000                               | 0.000                               | 0.000                               | 0.00      |
| 22-Nov                       | 14                    | 6.259  | 14.908 | 6.665  | 0.133                               | 0.400                               | 0.600                               | 0.000                 | 0.000                               | 0.000                               | 0.000                               | 0.00      |
| 23-Nov                       | 13                    | 5.812  | 13.844 | 6.189  | 0.124                               | 0.371                               | 0.557                               | 0.005                 | 0.000                               | 0.000                               | 0.000                               | 0.00      |
| 24-Nov                       | 15                    | 6.706  | 15.973 | 7.141  | 0.143                               | 0.428                               | 0.643                               | 0.000                 | 0.000                               | 0.000                               | 0.000                               | 0.00      |
| 25-Nov                       | 18                    | 8.047  | 19.168 | 8.569  | 0.171                               | 0.514                               | 0.771                               | 0.000                 | 0.000                               | 0.000                               | 0.000                               | 0.00      |
| 26-Nov                       | 14                    | 6.259  | 14.908 | 6.665  | 0.133                               | 0.400                               | 0.600                               | 0.000                 | 0.000                               | 0.000                               | 0.000                               | 0.00      |

**FOSTER WHEELER ENVIRONMENTAL CORPORATION**  
**CALCULATION SHEET - EXCEL 5.0**

By: E. Deken, PE  
 Date: 10/23/98  
 Ck'd By: Darrel J. Graziani, P.E.  
 Date: 11/07/98

Cal. No.: 981023ED01  
 Rev. No.: SJRPP 3  
 OFS: 7830.0020.0054

**Project:** JEA St. Johns Power Park

**Subject:** Fugitive Emission Estimates - Wind Erosion Coal Storage Pile

**Assumptions:**

1. The threshold friction velocity was selected based on data available in AP-42, Section 13.2.5.
2. Roughness height was estimated based on largest values listed in AP-42, Section 13.2.5
3. Pile is always at maximum capacity which is maximizing emissions.

**References:**

1. AP-42, Section 13.2.5, Industrial Wind Erosion
2. 1997 Local Climatological Data, NOAA, National Climatic Data Center

**Erosion Potential Calculations**

Threshold Friction Velocity: **1.12**  
 Roughness Height (m) **0.003**

| Number<br>of<br>Disturbances | Fastest Mile Values<br>Anemometer Height (m) |             |             |             | Equivalent Friction Velocities<br>u* = 0.1u* |                        |                        | Rain Fall<br>(inches) | Erosion Potential<br>(g/m^2)                    |                                                 |                                                 | Emissions<br>(lb) |
|------------------------------|----------------------------------------------|-------------|-------------|-------------|----------------------------------------------|------------------------|------------------------|-----------------------|-------------------------------------------------|-------------------------------------------------|-------------------------------------------------|-------------------|
|                              | 6:1<br>(mph)                                 | 10<br>(m/s) | 10<br>(mph) | 10<br>(m/s) | u*/u <sub>s</sub> :0.2                       | u*/u <sub>s</sub> :0.6 | u*/u <sub>s</sub> :0.9 |                       | 36% Pile<br>u <sub>s</sub> /u <sub>s</sub> :0.2 | 50% Pile<br>u <sub>s</sub> /u <sub>s</sub> :0.6 | 14% Pile<br>u <sub>s</sub> /u <sub>s</sub> :0.9 |                   |
| 27-Nov                       | 15                                           | 6.706       | 15.973      | 7.141       | 0.143                                        | 0.428                  | 0.643                  | 0.000                 | 0.000                                           | 0.000                                           | 0.000                                           | 0.00              |
| 28-Nov                       | 9                                            | 4.023       | 9.584       | 4.284       | 0.086                                        | 0.257                  | 0.386                  | 0.005                 | 0.000                                           | 0.000                                           | 0.000                                           | 0.00              |
| 29-Nov                       | 25                                           | 11.176      | 26.622      | 11.901      | 0.238                                        | 0.714                  | 1.071                  | 1.130                 | 0.000                                           | 0.000                                           | 0.000                                           | 0.00              |
| 30-Nov                       | 21                                           | 9.388       | 22.363      | 9.997       | 0.200                                        | 0.600                  | 0.900                  | 0.020                 | 0.000                                           | 0.000                                           | 0.000                                           | 0.00              |
| 01-Dec                       | 20                                           | 8.941       | 21.298      | 9.521       | 0.190                                        | 0.571                  | 0.857                  | 0.000                 | 0.000                                           | 0.000                                           | 0.000                                           | 0.00              |
| 02-Dec                       | 16                                           | 7.153       | 17.038      | 7.617       | 0.152                                        | 0.457                  | 0.686                  | 0.000                 | 0.000                                           | 0.000                                           | 0.000                                           | 0.00              |
| 03-Dec                       | 15                                           | 6.706       | 15.973      | 7.141       | 0.143                                        | 0.428                  | 0.643                  | 0.100                 | 0.000                                           | 0.000                                           | 0.000                                           | 0.00              |
| 04-Dec                       | 21                                           | 9.388       | 22.363      | 9.997       | 0.200                                        | 0.600                  | 0.900                  | 0.100                 | 0.000                                           | 0.000                                           | 0.000                                           | 0.00              |
| 05-Dec                       | 20                                           | 8.941       | 21.298      | 9.521       | 0.190                                        | 0.571                  | 0.857                  | 0.000                 | 0.000                                           | 0.000                                           | 0.000                                           | 0.00              |
| 06-Dec                       | 20                                           | 8.941       | 21.298      | 9.521       | 0.190                                        | 0.571                  | 0.857                  | 0.000                 | 0.000                                           | 0.000                                           | 0.000                                           | 0.00              |
| 07-Dec                       | 11                                           | 4.917       | 11.714      | 5.237       | 0.105                                        | 0.314                  | 0.471                  | 0.000                 | 0.000                                           | 0.000                                           | 0.000                                           | 0.00              |
| 08-Dec                       | 14                                           | 6.259       | 14.908      | 6.665       | 0.133                                        | 0.400                  | 0.600                  | 0.060                 | 0.000                                           | 0.000                                           | 0.000                                           | 0.00              |
| 09-Dec                       | 11                                           | 4.917       | 11.714      | 5.237       | 0.105                                        | 0.314                  | 0.471                  | 0.110                 | 0.000                                           | 0.000                                           | 0.000                                           | 0.00              |
| 10-Dec                       | 37                                           | 16.540      | 39.401      | 17.614      | 0.352                                        | 1.057                  | 1.585                  | 2.860                 | 0.000                                           | 0.000                                           | 0.000                                           | 0.00              |
| 11-Dec                       | 15                                           | 6.706       | 15.973      | 7.141       | 0.143                                        | 0.428                  | 0.643                  | 0.005                 | 0.000                                           | 0.000                                           | 0.000                                           | 0.00              |
| 12-Dec                       | 21                                           | 9.388       | 22.363      | 9.997       | 0.200                                        | 0.600                  | 0.900                  | 2.720                 | 0.000                                           | 0.000                                           | 0.000                                           | 0.00              |
| 13-Dec                       | 13                                           | 5.812       | 13.844      | 6.189       | 0.124                                        | 0.371                  | 0.557                  | 0.300                 | 0.000                                           | 0.000                                           | 0.000                                           | 0.00              |
| 14-Dec                       | 20                                           | 8.941       | 21.298      | 9.521       | 0.190                                        | 0.571                  | 0.857                  | 1.370                 | 0.000                                           | 0.000                                           | 0.000                                           | 0.00              |
| 15-Dec                       | 26                                           | 11.623      | 27.687      | 12.377      | 0.248                                        | 0.743                  | 1.114                  | 1.590                 | 0.000                                           | 0.000                                           | 0.000                                           | 0.00              |
| 16-Dec                       | 17                                           | 7.600       | 18.103      | 8.093       | 0.162                                        | 0.486                  | 0.728                  | 0.000                 | 0.000                                           | 0.000                                           | 0.000                                           | 0.00              |
| 17-Dec                       | 14                                           | 6.259       | 14.908      | 6.665       | 0.133                                        | 0.400                  | 0.600                  | 0.000                 | 0.000                                           | 0.000                                           | 0.000                                           | 0.00              |
| 18-Dec                       | 13                                           | 5.812       | 13.844      | 6.189       | 0.124                                        | 0.371                  | 0.557                  | 0.000                 | 0.000                                           | 0.000                                           | 0.000                                           | 0.00              |
| 19-Dec                       | 7                                            | 3.129       | 7.454       | 3.332       | 0.067                                        | 0.200                  | 0.300                  | 0.000                 | 0.000                                           | 0.000                                           | 0.000                                           | 0.00              |
| 20-Dec                       | 13                                           | 5.812       | 13.844      | 6.189       | 0.124                                        | 0.371                  | 0.557                  | 0.000                 | 0.000                                           | 0.000                                           | 0.000                                           | 0.00              |
| 21-Dec                       | 14                                           | 6.259       | 14.908      | 6.665       | 0.133                                        | 0.400                  | 0.600                  | 0.000                 | 0.000                                           | 0.000                                           | 0.000                                           | 0.00              |
| 22-Dec                       | 16                                           | 7.153       | 17.038      | 7.617       | 0.152                                        | 0.457                  | 0.686                  | 0.010                 | 0.000                                           | 0.000                                           | 0.000                                           | 0.00              |
| 23-Dec                       | 13                                           | 5.812       | 13.844      | 6.189       | 0.124                                        | 0.371                  | 0.557                  | 0.030                 | 0.000                                           | 0.000                                           | 0.000                                           | 0.00              |
| 24-Dec                       | 15                                           | 6.706       | 15.973      | 7.141       | 0.143                                        | 0.428                  | 0.643                  | 0.190                 | 0.000                                           | 0.000                                           | 0.000                                           | 0.00              |
| 25-Dec                       | 14                                           | 6.259       | 14.908      | 6.665       | 0.133                                        | 0.400                  | 0.600                  | 0.090                 | 0.000                                           | 0.000                                           | 0.000                                           | 0.00              |
| 26-Dec                       | 13                                           | 5.812       | 13.844      | 6.189       | 0.124                                        | 0.371                  | 0.557                  | 0.170                 | 0.000                                           | 0.000                                           | 0.000                                           | 0.00              |
| 27-Dec                       | 25                                           | 11.176      | 26.622      | 11.901      | 0.238                                        | 0.714                  | 1.071                  | 0.040                 | 0.000                                           | 0.000                                           | 0.000                                           | 0.00              |
| 28-Dec                       | 13                                           | 5.812       | 13.844      | 6.189       | 0.124                                        | 0.371                  | 0.557                  | 0.000                 | 0.000                                           | 0.000                                           | 0.000                                           | 0.00              |
| 29-Dec                       | 26                                           | 11.623      | 27.687      | 12.377      | 0.248                                        | 0.743                  | 1.114                  | 0.030                 | 0.000                                           | 0.000                                           | 0.000                                           | 0.00              |
| 30-Dec                       | 26                                           | 11.623      | 27.687      | 12.377      | 0.248                                        | 0.743                  | 1.114                  | 0.000                 | 0.000                                           | 0.000                                           | 0.000                                           | 0.00              |
| 31-Dec                       | 25                                           | 11.176      | 26.622      | 11.901      | 0.238                                        | 0.714                  | 1.071                  | 0.000                 | 0.000                                           | 0.000                                           | 0.000                                           | 0.00              |
| <b>Totals:</b>               |                                              |             |             |             |                                              |                        |                        |                       | 0.00                                            | 0.00                                            | 4.72                                            | 126.58            |
| <b>Worst Case Day</b>        |                                              |             |             |             |                                              |                        |                        |                       | 0.000                                           | 0.000                                           | 2.359                                           |                   |

**Storage Pile Calculations**

Control Efficiency 90.00%  
 Rain Days (>0.01") 120 AP42, Section 13.2.2  
 Storage Pile Surface Area 87007.49  
 Uncontrolled (TPY) 0.06  
 Controlled (TPY) 0.01  
 Worst Case Day (lb/24-hr) 6 PM10 - AP42 Section 13.2.5  
 Worst Case Day (gps) 0.033 Per AP42, Section 13.2.5  
 #Days Winds > 12 MPH 343  
 #Days Rain > 0.01 " 130  
 Worst Case Day (gps) 0.053 Per EPA Background Document

**FOSTER WHEELER ENVIRONMENTAL CORPORATION  
CALCULATION SHEET - EXCEL 5.0**

**By: E. Deken, PE**  
**Date: 10/23/98**  
**Cl'd By: Darrel J. Graziani, P.E.**  
**Date: 11/07/98**

**Cal. No.: 981023ED01**  
**Rev. No.: SJRPP 4**  
**OFS: 7830.0020.0054**

**Project: JEA St. Johns Power Park**

**Subject: Fugitive Emission Estimates - Wind Erosion Petroleum Coke Storage Pile**

**Assumptions:**

1. The threshold friction velocity was selected based on data available in AP-42, Section 13.2.5.
2. Roughness height was estimated based on largest values listed in AP-42, Section 13.2.5
3. Pile is always at maximum capacity which is maximizing emissions.

**References:**

1. AP-42, Section 13.2.5, Industrial Wind Erosion
2. 1997 Local Climatological Data, NOAA, National Climatic Data Center

**Erosion Potential Calculations**

Threshold Friction Velocity: **1.02**  
 Roughness Height (m) **0.003**

| Number<br>of<br>Disturbances | Fastest Mile Values   |             |             |             | Equivalent Friction Velocities |               |               | Rain Fall<br>(inches) | Erosion Potential         |                           |                           | Emissions<br>(lb) |
|------------------------------|-----------------------|-------------|-------------|-------------|--------------------------------|---------------|---------------|-----------------------|---------------------------|---------------------------|---------------------------|-------------------|
|                              | Anemometer Height (m) |             |             |             | $u^* \approx 0.1u^*$<br>(m/s)  |               |               |                       | (g/m^2)                   |                           |                           |                   |
|                              | 6:1<br>(mph)          | 10<br>(m/s) | 10<br>(mph) | 10<br>(m/s) | $u_a/u_t:0.2$                  | $u_a/u_t:0.6$ | $u_a/u_t:0.9$ |                       | 36% Pile<br>$u_a/u_t:0.2$ | 50% Pile<br>$u_a/u_t:0.6$ | 14% Pile<br>$u_a/u_t:0.9$ |                   |
| 01-Jan                       | 15                    | 6.706       | 15.973      | 7.141       | 0.143                          | 0.428         | 0.643         | 0.000                 | 0.000                     | 0.000                     | 0.000                     | 0.00              |
| 02-Jan                       | 14                    | 6.259       | 14.908      | 6.665       | 0.133                          | 0.400         | 0.600         | 0.000                 | 0.000                     | 0.000                     | 0.000                     | 0.00              |
| 03-Jan                       | 16                    | 7.153       | 17.038      | 7.617       | 0.152                          | 0.457         | 0.686         | 0.000                 | 0.000                     | 0.000                     | 0.000                     | 0.00              |
| 04-Jan                       | 15                    | 6.706       | 15.973      | 7.141       | 0.143                          | 0.428         | 0.643         | 0.000                 | 0.000                     | 0.000                     | 0.000                     | 0.00              |
| 05-Jan                       | 22                    | 9.835       | 23.428      | 10.473      | 0.209                          | 0.628         | 0.943         | 0.120                 | 0.000                     | 0.000                     | 0.000                     | 0.00              |
| 06-Jan                       | 9                     | 4.023       | 9.584       | 4.284       | 0.086                          | 0.257         | 0.386         | 0.280                 | 0.000                     | 0.000                     | 0.000                     | 0.00              |
| 07-Jan                       | 14                    | 6.259       | 14.908      | 6.665       | 0.133                          | 0.400         | 0.600         | 0.030                 | 0.000                     | 0.000                     | 0.000                     | 0.00              |
| 08-Jan                       | 17                    | 7.600       | 18.103      | 8.093       | 0.162                          | 0.486         | 0.728         | 0.040                 | 0.000                     | 0.000                     | 0.000                     | 0.00              |
| 09-Jan                       | 20                    | 8.941       | 21.298      | 9.521       | 0.190                          | 0.571         | 0.857         | 0.600                 | 0.000                     | 0.000                     | 0.000                     | 0.00              |
| 10-Jan                       | 26                    | 11.623      | 27.687      | 12.377      | 0.248                          | 0.743         | 1.114         | 0.000                 | 0.000                     | 0.000                     | 2.861                     | 76.76             |
| 11-Jan                       | 14                    | 6.259       | 14.908      | 6.665       | 0.133                          | 0.400         | 0.600         | 0.000                 | 0.000                     | 0.000                     | 0.000                     | 0.00              |
| 12-Jan                       | 10                    | 4.470       | 10.649      | 4.760       | 0.095                          | 0.286         | 0.428         | 0.000                 | 0.000                     | 0.000                     | 0.000                     | 0.00              |
| 13-Jan                       | 15                    | 6.706       | 15.973      | 7.141       | 0.143                          | 0.428         | 0.643         | 0.000                 | 0.000                     | 0.000                     | 0.000                     | 0.00              |
| 14-Jan                       | 20                    | 8.941       | 21.298      | 9.521       | 0.190                          | 0.571         | 0.857         | 0.000                 | 0.000                     | 0.000                     | 0.000                     | 0.00              |
| 15-Jan                       | 16                    | 7.153       | 17.038      | 7.617       | 0.152                          | 0.457         | 0.686         | 0.005                 | 0.000                     | 0.000                     | 0.000                     | 0.00              |
| 16-Jan                       | 23                    | 10.282      | 24.492      | 10.949      | 0.219                          | 0.657         | 0.985         | 0.330                 | 0.000                     | 0.000                     | 0.000                     | 0.00              |
| 17-Jan                       | 24                    | 10.729      | 25.557      | 11.425      | 0.229                          | 0.686         | 1.028         | 0.000                 | 0.000                     | 0.000                     | 0.211                     | 5.65              |
| 18-Jan                       | 21                    | 9.388       | 22.363      | 9.997       | 0.200                          | 0.600         | 0.900         | 0.000                 | 0.000                     | 0.000                     | 0.000                     | 0.00              |
| 19-Jan                       | 17                    | 7.600       | 18.103      | 8.093       | 0.162                          | 0.486         | 0.728         | 0.000                 | 0.000                     | 0.000                     | 0.000                     | 0.00              |
| 20-Jan                       | 15                    | 6.706       | 15.973      | 7.141       | 0.143                          | 0.428         | 0.643         | 0.000                 | 0.000                     | 0.000                     | 0.000                     | 0.00              |
| 21-Jan                       | 16                    | 7.153       | 17.038      | 7.617       | 0.152                          | 0.457         | 0.686         | 0.000                 | 0.000                     | 0.000                     | 0.000                     | 0.00              |
| 22-Jan                       | 22                    | 9.835       | 23.428      | 10.473      | 0.209                          | 0.628         | 0.943         | 0.000                 | 0.000                     | 0.000                     | 0.000                     | 0.00              |
| 23-Jan                       | 15                    | 6.706       | 15.973      | 7.141       | 0.143                          | 0.428         | 0.643         | 0.005                 | 0.000                     | 0.000                     | 0.000                     | 0.00              |
| 24-Jan                       | 18                    | 8.047       | 19.168      | 8.569       | 0.171                          | 0.514         | 0.771         | 0.000                 | 0.000                     | 0.000                     | 0.000                     | 0.00              |
| 25-Jan                       | 18                    | 8.047       | 19.168      | 8.569       | 0.171                          | 0.514         | 0.771         | 1.200                 | 0.000                     | 0.000                     | 0.000                     | 0.00              |
| 26-Jan                       | 17                    | 7.600       | 18.103      | 8.093       | 0.162                          | 0.486         | 0.728         | 0.000                 | 0.000                     | 0.000                     | 0.000                     | 0.00              |
| 27-Jan                       | 18                    | 8.047       | 19.168      | 8.569       | 0.171                          | 0.514         | 0.771         | 0.000                 | 0.000                     | 0.000                     | 0.000                     | 0.00              |
| 28-Jan                       | 17                    | 7.600       | 18.103      | 8.093       | 0.162                          | 0.486         | 0.728         | 0.000                 | 0.000                     | 0.000                     | 0.000                     | 0.00              |
| 29-Jan                       | 22                    | 9.835       | 23.428      | 10.473      | 0.209                          | 0.628         | 0.943         | 0.000                 | 0.000                     | 0.000                     | 0.000                     | 0.00              |
| 30-Jan                       | 15                    | 6.706       | 15.973      | 7.141       | 0.143                          | 0.428         | 0.643         | 0.310                 | 0.000                     | 0.000                     | 0.000                     | 0.00              |
| 31-Jan                       | 15                    | 6.706       | 15.973      | 7.141       | 0.143                          | 0.428         | 0.643         | 0.000                 | 0.000                     | 0.000                     | 0.000                     | 0.00              |
| 01-Feb                       | 21                    | 9.388       | 22.363      | 9.997       | 0.200                          | 0.600         | 0.900         | 0.000                 | 0.000                     | 0.000                     | 0.000                     | 0.00              |
| 02-Feb                       | 10                    | 4.470       | 10.649      | 4.760       | 0.095                          | 0.286         | 0.428         | 0.000                 | 0.000                     | 0.000                     | 0.000                     | 0.00              |
| 03-Feb                       | 13                    | 5.812       | 13.844      | 6.189       | 0.124                          | 0.371         | 0.557         | 0.000                 | 0.000                     | 0.000                     | 0.000                     | 0.00              |
| 04-Feb                       | 15                    | 6.706       | 15.973      | 7.141       | 0.143                          | 0.428         | 0.643         | 0.000                 | 0.000                     | 0.000                     | 0.000                     | 0.00              |
| 05-Feb                       | 17                    | 7.600       | 18.103      | 8.093       | 0.162                          | 0.486         | 0.728         | 0.000                 | 0.000                     | 0.000                     | 0.000                     | 0.00              |
| 06-Feb                       | 14                    | 6.259       | 14.908      | 6.665       | 0.133                          | 0.400         | 0.600         | 0.000                 | 0.000                     | 0.000                     | 0.000                     | 0.00              |
| 07-Feb                       | 11                    | 4.917       | 11.714      | 5.237       | 0.105                          | 0.314         | 0.471         | 0.000                 | 0.000                     | 0.000                     | 0.000                     | 0.00              |
| 08-Feb                       | 21                    | 9.388       | 22.363      | 9.997       | 0.200                          | 0.600         | 0.900         | 0.030                 | 0.000                     | 0.000                     | 0.000                     | 0.00              |
| 09-Feb                       | 16                    | 7.153       | 17.038      | 7.617       | 0.152                          | 0.457         | 0.686         | 0.005                 | 0.000                     | 0.000                     | 0.000                     | 0.00              |
| 10-Feb                       | 11                    | 4.917       | 11.714      | 5.237       | 0.105                          | 0.314         | 0.471         | 0.005                 | 0.000                     | 0.000                     | 0.000                     | 0.00              |
| 11-Feb                       | 10                    | 4.470       | 10.649      | 4.760       | 0.095                          | 0.286         | 0.428         | 0.000                 | 0.000                     | 0.000                     | 0.000                     | 0.00              |
| 12-Feb                       | 14                    | 6.259       | 14.908      | 6.665       | 0.133                          | 0.400         | 0.600         | 0.000                 | 0.000                     | 0.000                     | 0.000                     | 0.00              |
| 13-Feb                       | 18                    | 8.047       | 19.168      | 8.569       | 0.171                          | 0.514         | 0.771         | 0.130                 | 0.000                     | 0.000                     | 0.000                     | 0.00              |
| 14-Feb                       | 18                    | 8.047       | 19.168      | 8.569       | 0.171                          | 0.514         | 0.771         | 0.040                 | 0.000                     | 0.000                     | 0.000                     | 0.00              |
| 15-Feb                       | 18                    | 8.047       | 19.168      | 8.569       | 0.171                          | 0.514         | 0.771         | 0.400                 | 0.000                     | 0.000                     | 0.000                     | 0.00              |
| 16-Feb                       | 15                    | 6.706       | 15.973      | 7.141       | 0.143                          | 0.428         | 0.643         | 0.000                 | 0.000                     | 0.000                     | 0.000                     | 0.00              |
| 17-Feb                       | 20                    | 8.941       | 21.298      | 9.521       | 0.190                          | 0.571         | 0.857         | 0.000                 | 0.000                     | 0.000                     | 0.000                     | 0.00              |
| 18-Feb                       | 16                    | 7.153       | 17.038      | 7.617       | 0.152                          | 0.457         | 0.686         | 0.000                 | 0.000                     | 0.000                     | 0.000                     | 0.00              |
| 19-Feb                       | 14                    | 6.259       | 14.908      | 6.665       | 0.133                          | 0.400         | 0.600         | 0.005                 | 0.000                     | 0.000                     | 0.000                     | 0.00              |
| 20-Feb                       | 20                    | 8.941       | 21.298      | 9.521       | 0.190                          | 0.571         | 0.857         | 0.000                 | 0.000                     | 0.000                     | 0.000                     | 0.00              |
| 21-Feb                       | 24                    | 10.729      | 25.557      | 11.425      | 0.229                          | 0.686         | 1.028         | 0.000                 | 0.000                     | 0.000                     | 0.211                     | 5.65              |
| 22-Feb                       | 17                    | 7.600       | 18.103      | 8.093       | 0.162                          | 0.486         | 0.728         | 0.310                 | 0.000                     | 0.000                     | 0.000                     | 0.00              |
| 23-Feb                       | 18                    | 8.047       | 19.168      | 8.569       | 0.171                          | 0.514         | 0.771         | 0.005                 | 0.000                     | 0.000                     | 0.000                     | 0.00              |
| 24-Feb                       | 18                    | 8.047       | 19.168      | 8.569       | 0.171                          | 0.514         | 0.771         | 0.140                 | 0.000                     | 0.000                     | 0.000                     | 0.00              |

**FOSTER WHEELER ENVIRONMENTAL CORPORATION  
CALCULATION SHEET - EXCEL 5.0**

**By: E. Deken, PE**  
**Date: 10/23/98**  
**Ck'd By: Darrel J. Graziani, P.E.**  
**Date: 11/07/98**

**Cal. No.: 981023ED01**  
**Rev. No.: SJRPP 4**  
**OFS: 7830.0020.0054**

**Project: JEA St. Johns Power Park**

**Subject: Fugitive Emission Estimates - Wind Erosion Petroleum Coke Storage Pile**

**Assumptions:**

1. The threshold friction velocity was selected based on data available in AP-42, Section 13.2.5.
2. Roughness height was estimated based on largest values listed in AP-42, Section 13.2.5
3. Pile is always at maximum capacity which is maximizing emissions.

**References:**

1. AP-42, Section 13.2.5, Industrial Wind Erosion
2. 1997 Local Climatological Data, NOAA, National Climatic Data Center

**Erosion Potential Calculations**

Threshold Friction Velocity: **1.02**  
Roughness Height (m) **0.003**

| Number<br>of<br>Disturbances | Fastest Mile Values<br>Anemometer Height (m) |        |        |        | Equivalent Friction Velocities<br>$u^* = 0.1u^*$ |               |               | Rain Fall<br>(inches) | Erosion Potential<br>(g/m^2) |               |               | Emissions<br>(lb) |
|------------------------------|----------------------------------------------|--------|--------|--------|--------------------------------------------------|---------------|---------------|-----------------------|------------------------------|---------------|---------------|-------------------|
|                              | 6.1                                          |        | 10     |        | (m/s)                                            |               |               |                       | 36% Pile                     | 50% Pile      | 14% Pile      |                   |
|                              | (mph)                                        | (m/s)  | (mph)  | (m/s)  | $u_a/u_t:0.2$                                    | $u_a/u_t:0.6$ | $u_a/u_t:0.9$ |                       | $u_a/u_t:0.2$                | $u_a/u_t:0.6$ | $u_a/u_t:0.9$ |                   |
| 25-Feb                       | 21                                           | 9.388  | 22.363 | 9.997  | 0.200                                            | 0.600         | 0.900         | 0.230                 | 0.000                        | 0.000         | 0.000         | 0.00              |
| 26-Feb                       | 15                                           | 6.706  | 15.973 | 7.141  | 0.143                                            | 0.428         | 0.643         | 0.000                 | 0.000                        | 0.000         | 0.000         | 0.00              |
| 27-Feb                       | 20                                           | 8.941  | 21.298 | 9.521  | 0.190                                            | 0.571         | 0.857         | 0.000                 | 0.000                        | 0.000         | 0.000         | 0.00              |
| 28-Feb                       | 20                                           | 8.941  | 21.298 | 9.521  | 0.190                                            | 0.571         | 0.857         | 0.000                 | 0.000                        | 0.000         | 0.000         | 0.00              |
| 01-Mar                       | 20                                           | 8.941  | 21.298 | 9.521  | 0.190                                            | 0.571         | 0.857         | 0.000                 | 0.000                        | 0.000         | 0.000         | 0.00              |
| 02-Mar                       | 15                                           | 6.706  | 15.973 | 7.141  | 0.143                                            | 0.428         | 0.643         | 0.000                 | 0.000                        | 0.000         | 0.000         | 0.00              |
| 03-Mar                       | 22                                           | 9.835  | 23.428 | 10.473 | 0.209                                            | 0.628         | 0.943         | 0.000                 | 0.000                        | 0.000         | 0.000         | 0.00              |
| 04-Mar                       | 17                                           | 7.600  | 18.103 | 8.093  | 0.162                                            | 0.486         | 0.728         | 0.000                 | 0.000                        | 0.000         | 0.000         | 0.00              |
| 05-Mar                       | 11                                           | 4.917  | 11.714 | 5.237  | 0.105                                            | 0.314         | 0.471         | 0.000                 | 0.000                        | 0.000         | 0.000         | 0.00              |
| 06-Mar                       | 24                                           | 10.729 | 25.557 | 11.425 | 0.229                                            | 0.686         | 1.028         | 0.005                 | 0.000                        | 0.000         | 0.211         | 5.65              |
| 07-Mar                       | 18                                           | 8.047  | 19.168 | 8.569  | 0.171                                            | 0.514         | 0.771         | 0.000                 | 0.000                        | 0.000         | 0.000         | 0.00              |
| 08-Mar                       | 14                                           | 6.259  | 14.908 | 6.665  | 0.133                                            | 0.400         | 0.600         | 0.000                 | 0.000                        | 0.000         | 0.000         | 0.00              |
| 09-Mar                       | 20                                           | 8.941  | 21.298 | 9.521  | 0.190                                            | 0.571         | 0.857         | 0.000                 | 0.000                        | 0.000         | 0.000         | 0.00              |
| 10-Mar                       | 16                                           | 7.153  | 17.038 | 7.617  | 0.152                                            | 0.457         | 0.686         | 0.000                 | 0.000                        | 0.000         | 0.000         | 0.00              |
| 11-Mar                       | 17                                           | 7.600  | 18.103 | 8.093  | 0.162                                            | 0.486         | 0.728         | 0.005                 | 0.000                        | 0.000         | 0.000         | 0.00              |
| 12-Mar                       | 20                                           | 8.941  | 21.298 | 9.521  | 0.190                                            | 0.571         | 0.857         | 0.000                 | 0.000                        | 0.000         | 0.000         | 0.00              |
| 13-Mar                       | 29                                           | 12.964 | 30.882 | 13.805 | 0.276                                            | 0.828         | 1.242         | 0.170                 | 0.000                        | 0.000         | 0.000         | 0.00              |
| 14-Mar                       | 18                                           | 8.047  | 19.168 | 8.569  | 0.171                                            | 0.514         | 0.771         | 0.390                 | 0.000                        | 0.000         | 0.000         | 0.00              |
| 15-Mar                       | 15                                           | 6.706  | 15.973 | 7.141  | 0.143                                            | 0.428         | 0.643         | 0.000                 | 0.000                        | 0.000         | 0.000         | 0.00              |
| 16-Mar                       | 20                                           | 8.941  | 21.298 | 9.521  | 0.190                                            | 0.571         | 0.857         | 0.000                 | 0.000                        | 0.000         | 0.000         | 0.00              |
| 17-Mar                       | 18                                           | 8.047  | 19.168 | 8.569  | 0.171                                            | 0.514         | 0.771         | 0.000                 | 0.000                        | 0.000         | 0.000         | 0.00              |
| 18-Mar                       | 15                                           | 6.706  | 15.973 | 7.141  | 0.143                                            | 0.428         | 0.643         | 0.005                 | 0.000                        | 0.000         | 0.000         | 0.00              |
| 19-Mar                       | 18                                           | 8.047  | 19.168 | 8.569  | 0.171                                            | 0.514         | 0.771         | 0.000                 | 0.000                        | 0.000         | 0.000         | 0.00              |
| 20-Mar                       | 13                                           | 5.812  | 13.844 | 6.189  | 0.124                                            | 0.371         | 0.557         | 0.030                 | 0.000                        | 0.000         | 0.000         | 0.00              |
| 21-Mar                       | 14                                           | 6.259  | 14.908 | 6.665  | 0.133                                            | 0.400         | 0.600         | 0.470                 | 0.000                        | 0.000         | 0.000         | 0.00              |
| 22-Mar                       | 21                                           | 9.388  | 22.363 | 9.997  | 0.200                                            | 0.600         | 0.900         | 0.000                 | 0.000                        | 0.000         | 0.000         | 0.00              |
| 23-Mar                       | 17                                           | 7.600  | 18.103 | 8.093  | 0.162                                            | 0.486         | 0.728         | 0.000                 | 0.000                        | 0.000         | 0.000         | 0.00              |
| 24-Mar                       | 25                                           | 11.176 | 26.622 | 11.901 | 0.238                                            | 0.714         | 1.071         | 0.005                 | 0.000                        | 0.000         | 1.429         | 38.35             |
| 25-Mar                       | 24                                           | 10.729 | 25.557 | 11.425 | 0.229                                            | 0.686         | 1.028         | 0.490                 | 0.000                        | 0.000         | 0.000         | 0.00              |
| 26-Mar                       | 17                                           | 7.600  | 18.103 | 8.093  | 0.162                                            | 0.486         | 0.728         | 0.020                 | 0.000                        | 0.000         | 0.000         | 0.00              |
| 27-Mar                       | 13                                           | 5.812  | 13.844 | 6.189  | 0.124                                            | 0.371         | 0.557         | 0.000                 | 0.000                        | 0.000         | 0.000         | 0.00              |
| 28-Mar                       | 17                                           | 7.600  | 18.103 | 8.093  | 0.162                                            | 0.486         | 0.728         | 0.000                 | 0.000                        | 0.000         | 0.000         | 0.00              |
| 29-Mar                       | 22                                           | 9.835  | 23.428 | 10.473 | 0.209                                            | 0.628         | 0.943         | 0.005                 | 0.000                        | 0.000         | 0.000         | 0.00              |
| 30-Mar                       | 30                                           | 13.411 | 31.947 | 14.281 | 0.286                                            | 0.857         | 1.285         | 0.270                 | 0.000                        | 0.000         | 0.000         | 0.00              |
| 31-Mar                       | 25                                           | 11.176 | 26.622 | 11.901 | 0.238                                            | 0.714         | 1.071         | 0.005                 | 0.000                        | 0.000         | 1.429         | 38.35             |
| 01-Apr                       | 15                                           | 6.706  | 15.973 | 7.141  | 0.143                                            | 0.428         | 0.643         | 0.000                 | 0.000                        | 0.000         | 0.000         | 0.00              |
| 02-Apr                       | 21                                           | 9.388  | 22.363 | 9.997  | 0.200                                            | 0.600         | 0.900         | 0.000                 | 0.000                        | 0.000         | 0.000         | 0.00              |
| 03-Apr                       | 16                                           | 7.153  | 17.038 | 7.617  | 0.152                                            | 0.457         | 0.686         | 0.000                 | 0.000                        | 0.000         | 0.000         | 0.00              |
| 04-Apr                       | 16                                           | 7.153  | 17.038 | 7.617  | 0.152                                            | 0.457         | 0.686         | 0.000                 | 0.000                        | 0.000         | 0.000         | 0.00              |
| 05-Apr                       | 21                                           | 9.388  | 22.363 | 9.997  | 0.200                                            | 0.600         | 0.900         | 0.000                 | 0.000                        | 0.000         | 0.000         | 0.00              |
| 06-Apr                       | 17                                           | 7.600  | 18.103 | 8.093  | 0.162                                            | 0.486         | 0.728         | 0.005                 | 0.000                        | 0.000         | 0.000         | 0.00              |
| 07-Apr                       | 18                                           | 8.047  | 19.168 | 8.569  | 0.171                                            | 0.514         | 0.771         | 0.000                 | 0.000                        | 0.000         | 0.000         | 0.00              |
| 08-Apr                       | 21                                           | 9.388  | 22.363 | 9.997  | 0.200                                            | 0.600         | 0.900         | 0.000                 | 0.000                        | 0.000         | 0.000         | 0.00              |
| 09-Apr                       | 15                                           | 6.706  | 15.973 | 7.141  | 0.143                                            | 0.428         | 0.643         | 0.000                 | 0.000                        | 0.000         | 0.000         | 0.00              |
| 10-Apr                       | 21                                           | 9.388  | 22.363 | 9.997  | 0.200                                            | 0.600         | 0.900         | 0.000                 | 0.000                        | 0.000         | 0.000         | 0.00              |
| 11-Apr                       | 21                                           | 9.388  | 22.363 | 9.997  | 0.200                                            | 0.600         | 0.900         | 0.005                 | 0.000                        | 0.000         | 0.000         | 0.00              |
| 12-Apr                       | 22                                           | 9.835  | 23.428 | 10.473 | 0.209                                            | 0.628         | 0.943         | 0.050                 | 0.000                        | 0.000         | 0.000         | 0.00              |
| 13-Apr                       | 16                                           | 7.153  | 17.038 | 7.617  | 0.152                                            | 0.457         | 0.686         | 0.000                 | 0.000                        | 0.000         | 0.000         | 0.00              |
| 14-Apr                       | 14                                           | 6.259  | 14.908 | 6.665  | 0.133                                            | 0.400         | 0.600         | 0.550                 | 0.000                        | 0.000         | 0.000         | 0.00              |
| 15-Apr                       | 20                                           | 8.941  | 21.298 | 9.521  | 0.190                                            | 0.571         | 0.857         | 0.160                 | 0.000                        | 0.000         | 0.000         | 0.00              |
| 16-Apr                       | 16                                           | 7.153  | 17.038 | 7.617  | 0.152                                            | 0.457         | 0.686         | 0.000                 | 0.000                        | 0.000         | 0.000         | 0.00              |
| 17-Apr                       | 24                                           | 10.729 | 25.557 | 11.425 | 0.229                                            | 0.686         | 1.028         | 0.000                 | 0.000                        | 0.000         | 0.211         | 5.65              |
| 18-Apr                       | 20                                           | 8.941  | 21.298 | 9.521  | 0.190                                            | 0.571         | 0.857         | 0.000                 | 0.000                        | 0.000         | 0.000         | 0.00              |
| 19-Apr                       | 20                                           | 8.941  | 21.298 | 9.521  | 0.190                                            | 0.571         | 0.857         | 0.000                 | 0.000                        | 0.000         | 0.000         | 0.00              |
| 20-Apr                       | 18                                           | 8.047  | 19.168 | 8.569  | 0.171                                            | 0.514         | 0.771         | 0.000                 | 0.000                        | 0.000         | 0.000         | 0.00              |

**FOSTER WHEELER ENVIRONMENTAL CORPORATION**  
**CALCULATION SHEET - EXCEL 5.0**

**By:** E. Deken, PE  
**Date:** 10/23/98  
**Ch'd By:** Darrel J. Graziani, P.E.  
**Date:** 11/07/98

**Cal. No.:** 981023ED01  
**Rev. No.:** SJRPP 4  
**OPS:** 7830.0020.0054

**Project:** JEA St. Johns Power Park

**Subject:** Fugitive Emission Estimates - Wind Erosion Petroleum Coke Storage Pile

**Assumptions:**

1. The threshold friction velocity was selected based on data available in AP-42, Section 13.2.5.
2. Roughness height was estimated based on largest values listed in AP-42, Section 13.2.5
3. Pile is always at maximum capacity which is maximizing emissions.

**References:**

1. AP-42, Section 13.2.5, Industrial Wind Erosion
2. 1997 Local Climatological Data, NOAA, National Climatic Data Center

**Erosion Potential Calculations**

Threshold Friction Velocity: **1.02**  
 Roughness Height (m) **0.003**

| Number<br>of<br>Disturbances | Fastest Mile Values<br>Anemometer Height (m) |        |        |        | Equivalent Friction Velocities<br>u* = 0.1u*<br>(m/s) |                                     |                                     | Rain Fall<br>(Inches) | Erosion Potential<br>(g/m^2)                    |                                                 |       | Emissions<br>(lb) |
|------------------------------|----------------------------------------------|--------|--------|--------|-------------------------------------------------------|-------------------------------------|-------------------------------------|-----------------------|-------------------------------------------------|-------------------------------------------------|-------|-------------------|
|                              | 6.1                                          |        | 10     |        | u <sub>s</sub> /u <sub>s</sub> :0.2                   |                                     |                                     |                       | 36% Pile<br>u <sub>s</sub> /u <sub>s</sub> :0.2 |                                                 |       |                   |
|                              | (mph)                                        | (m/s)  | (mph)  | (m/s)  | u <sub>s</sub> /u <sub>s</sub> :0.2                   | u <sub>s</sub> /u <sub>s</sub> :0.6 | u <sub>s</sub> /u <sub>s</sub> :0.9 |                       | 50% Pile<br>u <sub>s</sub> /u <sub>s</sub> :0.6 | 14% Pile<br>u <sub>s</sub> /u <sub>s</sub> :0.9 |       |                   |
| 21-Apr                       | 20                                           | 8.941  | 21.298 | 9.521  | 0.190                                                 | 0.571                               | 0.857                               | 0.000                 | 0.000                                           | 0.000                                           | 0.000 | 0.00              |
| 22-Apr                       | 23                                           | 10.282 | 24.492 | 10.949 | 0.219                                                 | 0.657                               | 0.985                               | 0.010                 | 0.000                                           | 0.000                                           | 0.000 | 0.00              |
| 23-Apr                       | 43                                           | 19.223 | 45.790 | 20.470 | 0.409                                                 | 1.228                               | 1.842                               | 1.150                 | 0.000                                           | 0.000                                           | 0.000 | 0.00              |
| 24-Apr                       | 17                                           | 7.600  | 18.103 | 8.093  | 0.162                                                 | 0.486                               | 0.728                               | 0.000                 | 0.000                                           | 0.000                                           | 0.000 | 0.00              |
| 25-Apr                       | 16                                           | 7.153  | 17.038 | 7.617  | 0.152                                                 | 0.457                               | 0.686                               | 0.000                 | 0.000                                           | 0.000                                           | 0.000 | 0.00              |
| 26-Apr                       | 21                                           | 9.388  | 22.363 | 9.997  | 0.200                                                 | 0.600                               | 0.900                               | 0.049                 | 0.000                                           | 0.000                                           | 0.000 | 0.00              |
| 27-Apr                       | 21                                           | 9.388  | 22.363 | 9.997  | 0.200                                                 | 0.600                               | 0.900                               | 1.810                 | 0.000                                           | 0.000                                           | 0.000 | 0.00              |
| 28-Apr                       | 32                                           | 14.305 | 34.076 | 15.234 | 0.305                                                 | 0.914                               | 1.371                               | 0.340                 | 0.000                                           | 0.000                                           | 0.000 | 0.00              |
| 29-Apr                       | 22                                           | 9.835  | 23.428 | 10.473 | 0.209                                                 | 0.628                               | 0.943                               | 0.000                 | 0.000                                           | 0.000                                           | 0.000 | 0.00              |
| 30-Apr                       | 14                                           | 6.259  | 14.908 | 6.665  | 0.133                                                 | 0.400                               | 0.600                               | 0.000                 | 0.000                                           | 0.000                                           | 0.000 | 0.00              |
| 01-May                       | 18                                           | 8.047  | 19.168 | 8.569  | 0.171                                                 | 0.514                               | 0.771                               | 0.000                 | 0.000                                           | 0.000                                           | 0.000 | 0.00              |
| 02-May                       | 15                                           | 6.706  | 15.973 | 7.141  | 0.143                                                 | 0.428                               | 0.643                               | 0.000                 | 0.000                                           | 0.000                                           | 0.000 | 0.00              |
| 03-May                       | 31                                           | 13.858 | 33.012 | 14.758 | 0.295                                                 | 0.885                               | 1.328                               | 0.020                 | 0.000                                           | 0.000                                           | 0.000 | 0.00              |
| 04-May                       | 16                                           | 7.153  | 17.038 | 7.617  | 0.152                                                 | 0.457                               | 0.686                               | 0.000                 | 0.000                                           | 0.000                                           | 0.000 | 0.00              |
| 05-May                       | 16                                           | 7.153  | 17.038 | 7.617  | 0.152                                                 | 0.457                               | 0.686                               | 0.000                 | 0.000                                           | 0.000                                           | 0.000 | 0.00              |
| 06-May                       | 15                                           | 6.706  | 15.973 | 7.141  | 0.143                                                 | 0.428                               | 0.643                               | 0.000                 | 0.000                                           | 0.000                                           | 0.000 | 0.00              |
| 07-May                       | 18                                           | 8.047  | 19.168 | 8.569  | 0.171                                                 | 0.514                               | 0.771                               | 0.000                 | 0.000                                           | 0.000                                           | 0.000 | 0.00              |
| 08-May                       | 14                                           | 6.259  | 14.908 | 6.665  | 0.133                                                 | 0.400                               | 0.600                               | 0.000                 | 0.000                                           | 0.000                                           | 0.000 | 0.00              |
| 09-May                       | 26                                           | 11.623 | 27.687 | 12.377 | 0.248                                                 | 0.743                               | 1.114                               | 0.000                 | 0.000                                           | 0.000                                           | 2.861 | 76.76             |
| 10-May                       | 16                                           | 7.153  | 17.038 | 7.617  | 0.152                                                 | 0.457                               | 0.686                               | 0.000                 | 0.000                                           | 0.000                                           | 0.000 | 0.00              |
| 11-May                       | 17                                           | 7.600  | 18.103 | 8.093  | 0.162                                                 | 0.486                               | 0.728                               | 0.000                 | 0.000                                           | 0.000                                           | 0.000 | 0.00              |
| 12-May                       | 14                                           | 6.259  | 14.908 | 6.665  | 0.133                                                 | 0.400                               | 0.600                               | 0.780                 | 0.000                                           | 0.000                                           | 0.000 | 0.00              |
| 13-May                       | 17                                           | 7.600  | 18.103 | 8.093  | 0.162                                                 | 0.486                               | 0.728                               | 0.000                 | 0.000                                           | 0.000                                           | 0.000 | 0.00              |
| 14-May                       | 14                                           | 6.259  | 14.908 | 6.665  | 0.133                                                 | 0.400                               | 0.600                               | 0.000                 | 0.000                                           | 0.000                                           | 0.000 | 0.00              |
| 15-May                       | 18                                           | 8.047  | 19.168 | 8.569  | 0.171                                                 | 0.514                               | 0.771                               | 0.005                 | 0.000                                           | 0.000                                           | 0.000 | 0.00              |
| 16-May                       | 15                                           | 6.706  | 15.973 | 7.141  | 0.143                                                 | 0.428                               | 0.643                               | 0.000                 | 0.000                                           | 0.000                                           | 0.000 | 0.00              |
| 17-May                       | 13                                           | 5.812  | 13.844 | 6.189  | 0.124                                                 | 0.371                               | 0.557                               | 0.000                 | 0.000                                           | 0.000                                           | 0.000 | 0.00              |
| 18-May                       | 16                                           | 7.153  | 17.038 | 7.617  | 0.152                                                 | 0.457                               | 0.686                               | 0.000                 | 0.000                                           | 0.000                                           | 0.000 | 0.00              |
| 19-May                       | 16                                           | 7.153  | 17.038 | 7.617  | 0.152                                                 | 0.457                               | 0.686                               | 0.005                 | 0.000                                           | 0.000                                           | 0.000 | 0.00              |
| 20-May                       | 16                                           | 7.153  | 17.038 | 7.617  | 0.152                                                 | 0.457                               | 0.686                               | 0.005                 | 0.000                                           | 0.000                                           | 0.000 | 0.00              |
| 21-May                       | 15                                           | 6.706  | 15.973 | 7.141  | 0.143                                                 | 0.428                               | 0.643                               | 0.000                 | 0.000                                           | 0.000                                           | 0.000 | 0.00              |
| 22-May                       | 20                                           | 8.941  | 21.298 | 9.521  | 0.190                                                 | 0.571                               | 0.857                               | 0.000                 | 0.000                                           | 0.000                                           | 0.000 | 0.00              |
| 23-May                       | 20                                           | 8.941  | 21.298 | 9.521  | 0.190                                                 | 0.571                               | 0.857                               | 0.000                 | 0.000                                           | 0.000                                           | 0.000 | 0.00              |
| 24-May                       | 18                                           | 8.047  | 19.168 | 8.569  | 0.171                                                 | 0.514                               | 0.771                               | 0.300                 | 0.000                                           | 0.000                                           | 0.000 | 0.00              |
| 25-May                       | 22                                           | 9.835  | 23.428 | 10.473 | 0.209                                                 | 0.628                               | 0.943                               | 0.550                 | 0.000                                           | 0.000                                           | 0.000 | 0.00              |
| 26-May                       | 17                                           | 7.600  | 18.103 | 8.093  | 0.162                                                 | 0.486                               | 0.728                               | 0.005                 | 0.000                                           | 0.000                                           | 0.000 | 0.00              |
| 27-May                       | 26                                           | 11.623 | 27.687 | 12.377 | 0.248                                                 | 0.743                               | 1.114                               | 1.270                 | 0.000                                           | 0.000                                           | 0.000 | 0.00              |
| 28-May                       | 22                                           | 9.835  | 23.428 | 10.473 | 0.209                                                 | 0.628                               | 0.943                               | 0.050                 | 0.000                                           | 0.000                                           | 0.000 | 0.00              |
| 29-May                       | 21                                           | 9.388  | 22.363 | 9.997  | 0.200                                                 | 0.600                               | 0.900                               | 0.010                 | 0.000                                           | 0.000                                           | 0.000 | 0.00              |
| 30-May                       | 17                                           | 7.600  | 18.103 | 8.093  | 0.162                                                 | 0.486                               | 0.728                               | 0.000                 | 0.000                                           | 0.000                                           | 0.000 | 0.00              |
| 31-May                       | 21                                           | 9.388  | 22.363 | 9.997  | 0.200                                                 | 0.600                               | 0.900                               | 0.450                 | 0.000                                           | 0.000                                           | 0.000 | 0.00              |
| 01-Jun                       | 18                                           | 8.047  | 19.168 | 8.569  | 0.171                                                 | 0.514                               | 0.771                               | 0.830                 | 0.000                                           | 0.000                                           | 0.000 | 0.00              |
| 02-Jun                       | 14                                           | 6.259  | 14.908 | 6.665  | 0.133                                                 | 0.400                               | 0.600                               | 0.030                 | 0.000                                           | 0.000                                           | 0.000 | 0.00              |
| 03-Jun                       | 14                                           | 6.259  | 14.908 | 6.665  | 0.133                                                 | 0.400                               | 0.600                               | 0.000                 | 0.000                                           | 0.000                                           | 0.000 | 0.00              |
| 04-Jun                       | 21                                           | 9.388  | 22.363 | 9.997  | 0.200                                                 | 0.600                               | 0.900                               | 0.000                 | 0.000                                           | 0.000                                           | 0.000 | 0.00              |
| 05-Jun                       | 22                                           | 9.835  | 23.428 | 10.473 | 0.209                                                 | 0.628                               | 0.943                               | 0.850                 | 0.000                                           | 0.000                                           | 0.000 | 0.00              |
| 06-Jun                       | 22                                           | 9.835  | 23.428 | 10.473 | 0.209                                                 | 0.628                               | 0.943                               | 0.060                 | 0.000                                           | 0.000                                           | 0.000 | 0.00              |
| 07-Jun                       | 14                                           | 6.259  | 14.908 | 6.665  | 0.133                                                 | 0.400                               | 0.600                               | 0.005                 | 0.000                                           | 0.000                                           | 0.000 | 0.00              |
| 08-Jun                       | 17                                           | 7.600  | 18.103 | 8.093  | 0.162                                                 | 0.486                               | 0.728                               | 0.000                 | 0.000                                           | 0.000                                           | 0.000 | 0.00              |
| 09-Jun                       | 22                                           | 9.835  | 23.428 | 10.473 | 0.209                                                 | 0.628                               | 0.943                               | 0.010                 | 0.000                                           | 0.000                                           | 0.000 | 0.00              |
| 10-Jun                       | 20                                           | 8.941  | 21.298 | 9.521  | 0.190                                                 | 0.571                               | 0.857                               | 0.000                 | 0.000                                           | 0.000                                           | 0.000 | 0.00              |
| 11-Jun                       | 17                                           | 7.600  | 18.103 | 8.093  | 0.162                                                 | 0.486                               | 0.728                               | 0.005                 | 0.000                                           | 0.000                                           | 0.000 | 0.00              |
| 12-Jun                       | 16                                           | 7.153  | 17.038 | 7.617  | 0.152                                                 | 0.457                               | 0.686                               | 0.320                 | 0.000                                           | 0.000                                           | 0.000 | 0.00              |
| 13-Jun                       | 22                                           | 9.835  | 23.428 | 10.473 | 0.209                                                 | 0.628                               | 0.943                               | 0.005                 | 0.000                                           | 0.000                                           | 0.000 | 0.00              |
| 14-Jun                       | 22                                           | 9.835  | 23.428 | 10.473 | 0.209                                                 | 0.628                               | 0.943                               | 0.230                 | 0.000                                           | 0.000                                           | 0.000 | 0.00              |

**FOSTER WHEELER ENVIRONMENTAL CORPORATION**  
**CALCULATION SHEET - EXCEL 5.0**

**By: E. Deken, PE**  
**Date: 10/23/98**  
**Ck'd By: Darrel J. Graziani, P.E.**  
**Date: 11/07/98**

**Cal. No.: 981023ED01**  
**Rev. No.: SJRPP 4**  
**OFS: 7830.0020.0054**

**Project: JEA St. Johns Power Park**

**Subject: Fugitive Emission Estimates - Wind Erosion Petroleum Coke Storage Pile**

**Assumptions:**

1. The threshold friction velocity was selected based on data available in AP-42, Section 13.2.5.
2. Roughness height was estimated based on largest values listed in AP-42, Section 13.2.5
3. Pile is always at maximum capacity which is maximizing emissions.

**References:**

1. AP-42, Section 13.2.5, Industrial Wind Erosion
2. 1997 Local Climatological Data, NOAA, National Climatic Data Center

**Erosion Potential Calculations**

Threshold Friction Velocity: **1.02**  
 Roughness Height (m) **0.003**

| Number<br>of<br>Disturbances | Fastest Mile Values<br>Anemometer Height (m) |        |        |        | Equivalent Friction Velocities<br>u* = 0.1 u* |                                      |                                                  | Rain Fall<br>(inches) | Erosion Potential<br>(g/m^2)                     |                                                  |                                      | Emissions<br>(lb) |
|------------------------------|----------------------------------------------|--------|--------|--------|-----------------------------------------------|--------------------------------------|--------------------------------------------------|-----------------------|--------------------------------------------------|--------------------------------------------------|--------------------------------------|-------------------|
|                              | 6.1                                          |        | 10     |        | u* = 0.1 u*                                   |                                      | 36% Pile<br>u <sub>r</sub> /u <sub>t</sub> : 0.2 |                       | 50% Pile<br>u <sub>r</sub> /u <sub>t</sub> : 0.6 | 14% Pile<br>u <sub>r</sub> /u <sub>t</sub> : 0.9 |                                      |                   |
|                              | (mph)                                        | (m/s)  | (mph)  | (m/s)  | u <sub>r</sub> /u <sub>t</sub> : 0.2          | u <sub>r</sub> /u <sub>t</sub> : 0.6 |                                                  |                       |                                                  |                                                  | u <sub>r</sub> /u <sub>t</sub> : 0.9 |                   |
| 15-Jun                       | 23                                           | 10.282 | 24.492 | 10.949 | 0.219                                         | 0.657                                | 0.985                                            | 0.080                 | 0.000                                            | 0.000                                            | 0.000                                | 0.00              |
| 16-Jun                       | 14                                           | 6.259  | 14.908 | 6.665  | 0.133                                         | 0.400                                | 0.600                                            | 0.000                 | 0.000                                            | 0.000                                            | 0.000                                | 0.00              |
| 17-Jun                       | 29                                           | 12.964 | 30.882 | 13.805 | 0.276                                         | 0.828                                | 1.242                                            | 0.520                 | 0.000                                            | 0.000                                            | 0.000                                | 0.00              |
| 18-Jun                       | 26                                           | 11.623 | 27.687 | 12.377 | 0.248                                         | 0.743                                | 1.114                                            | 0.080                 | 0.000                                            | 0.000                                            | 0.000                                | 0.00              |
| 19-Jun                       | 31                                           | 13.858 | 33.012 | 14.758 | 0.295                                         | 0.885                                | 1.328                                            | 0.520                 | 0.000                                            | 0.000                                            | 0.000                                | 0.00              |
| 20-Jun                       | 25                                           | 11.176 | 26.622 | 11.901 | 0.238                                         | 0.714                                | 1.071                                            | 0.005                 | 0.000                                            | 0.000                                            | 1.429                                | 38.35             |
| 21-Jun                       | 17                                           | 7.600  | 18.103 | 8.093  | 0.162                                         | 0.486                                | 0.728                                            | 0.000                 | 0.000                                            | 0.000                                            | 0.000                                | 0.00              |
| 22-Jun                       | 16                                           | 7.153  | 17.038 | 7.617  | 0.152                                         | 0.457                                | 0.686                                            | 0.000                 | 0.000                                            | 0.000                                            | 0.000                                | 0.00              |
| 23-Jun                       | 14                                           | 6.259  | 14.908 | 6.665  | 0.133                                         | 0.400                                | 0.600                                            | 0.000                 | 0.000                                            | 0.000                                            | 0.000                                | 0.00              |
| 24-Jun                       | 17                                           | 7.600  | 18.103 | 8.093  | 0.162                                         | 0.486                                | 0.728                                            | 0.000                 | 0.000                                            | 0.000                                            | 0.000                                | 0.00              |
| 25-Jun                       | 17                                           | 7.600  | 18.103 | 8.093  | 0.162                                         | 0.486                                | 0.728                                            | 0.030                 | 0.000                                            | 0.000                                            | 0.000                                | 0.00              |
| 26-Jun                       | 24                                           | 10.729 | 25.557 | 11.425 | 0.229                                         | 0.686                                | 1.028                                            | 0.780                 | 0.000                                            | 0.000                                            | 0.000                                | 0.00              |
| 27-Jun                       | 33                                           | 14.752 | 35.141 | 15.710 | 0.314                                         | 0.943                                | 1.414                                            | 1.270                 | 0.000                                            | 0.000                                            | 0.000                                | 0.00              |
| 28-Jun                       | 23                                           | 10.282 | 24.492 | 10.949 | 0.219                                         | 0.657                                | 0.985                                            | 0.010                 | 0.000                                            | 0.000                                            | 0.000                                | 0.00              |
| 29-Jun                       | 15                                           | 6.706  | 15.973 | 7.141  | 0.143                                         | 0.428                                | 0.643                                            | 0.020                 | 0.000                                            | 0.000                                            | 0.000                                | 0.00              |
| 30-Jun                       | 20                                           | 8.941  | 21.298 | 9.521  | 0.190                                         | 0.571                                | 0.857                                            | 3.690                 | 0.000                                            | 0.000                                            | 0.000                                | 0.00              |
| 01-Jul                       | 22                                           | 9.835  | 23.428 | 10.473 | 0.209                                         | 0.628                                | 0.943                                            | 0.040                 | 0.000                                            | 0.000                                            | 0.000                                | 0.00              |
| 02-Jul                       | 14                                           | 6.259  | 14.908 | 6.665  | 0.133                                         | 0.400                                | 0.600                                            | 0.000                 | 0.000                                            | 0.000                                            | 0.000                                | 0.00              |
| 03-Jul                       | 13                                           | 5.812  | 13.844 | 6.189  | 0.124                                         | 0.371                                | 0.557                                            | 0.000                 | 0.000                                            | 0.000                                            | 0.000                                | 0.00              |
| 04-Jul                       | 22                                           | 9.835  | 23.428 | 10.473 | 0.209                                         | 0.628                                | 0.943                                            | 0.150                 | 0.000                                            | 0.000                                            | 0.000                                | 0.00              |
| 05-Jul                       | 38                                           | 16.988 | 40.466 | 18.090 | 0.362                                         | 1.085                                | 1.628                                            | 0.610                 | 0.000                                            | 0.000                                            | 0.000                                | 0.00              |
| 06-Jul                       | 29                                           | 12.964 | 30.882 | 13.805 | 0.276                                         | 0.828                                | 1.242                                            | 1.970                 | 0.000                                            | 0.000                                            | 0.000                                | 0.00              |
| 07-Jul                       | 21                                           | 9.388  | 22.363 | 9.997  | 0.200                                         | 0.600                                | 0.900                                            | 0.700                 | 0.000                                            | 0.000                                            | 0.000                                | 0.00              |
| 08-Jul                       | 16                                           | 7.153  | 17.038 | 7.617  | 0.152                                         | 0.457                                | 0.686                                            | 0.005                 | 0.000                                            | 0.000                                            | 0.000                                | 0.00              |
| 09-Jul                       | 16                                           | 7.153  | 17.038 | 7.617  | 0.152                                         | 0.457                                | 0.686                                            | 0.040                 | 0.000                                            | 0.000                                            | 0.000                                | 0.00              |
| 10-Jul                       | 16                                           | 7.153  | 17.038 | 7.617  | 0.152                                         | 0.457                                | 0.686                                            | 0.000                 | 0.000                                            | 0.000                                            | 0.000                                | 0.00              |
| 11-Jul                       | 20                                           | 8.941  | 21.298 | 9.521  | 0.190                                         | 0.571                                | 0.857                                            | 0.900                 | 0.000                                            | 0.000                                            | 0.000                                | 0.00              |
| 12-Jul                       | 16                                           | 7.153  | 17.038 | 7.617  | 0.152                                         | 0.457                                | 0.686                                            | 0.450                 | 0.000                                            | 0.000                                            | 0.000                                | 0.00              |
| 13-Jul                       | 14                                           | 6.259  | 14.908 | 6.665  | 0.133                                         | 0.400                                | 0.600                                            | 0.000                 | 0.000                                            | 0.000                                            | 0.000                                | 0.00              |
| 14-Jul                       | 14                                           | 6.259  | 14.908 | 6.665  | 0.133                                         | 0.400                                | 0.600                                            | 0.000                 | 0.000                                            | 0.000                                            | 0.000                                | 0.00              |
| 15-Jul                       | 15                                           | 6.706  | 15.973 | 7.141  | 0.143                                         | 0.428                                | 0.643                                            | 0.000                 | 0.000                                            | 0.000                                            | 0.000                                | 0.00              |
| 16-Jul                       | 24                                           | 10.729 | 25.557 | 11.425 | 0.229                                         | 0.686                                | 1.028                                            | 0.005                 | 0.000                                            | 0.000                                            | 0.211                                | 5.65              |
| 17-Jul                       | 20                                           | 8.941  | 21.298 | 9.521  | 0.190                                         | 0.571                                | 0.857                                            | 0.020                 | 0.000                                            | 0.000                                            | 0.000                                | 0.00              |
| 18-Jul                       | 28                                           | 12.517 | 29.817 | 13.329 | 0.267                                         | 0.800                                | 1.200                                            | 0.005                 | 0.000                                            | 0.000                                            | 6.363                                | 170.72            |
| 19-Jul                       | 22                                           | 9.835  | 23.428 | 10.473 | 0.209                                         | 0.628                                | 0.943                                            | 0.005                 | 0.000                                            | 0.000                                            | 0.000                                | 0.00              |
| 20-Jul                       | 23                                           | 10.282 | 24.492 | 10.949 | 0.219                                         | 0.657                                | 0.985                                            | 0.010                 | 0.000                                            | 0.000                                            | 0.000                                | 0.00              |
| 21-Jul                       | 16                                           | 7.153  | 17.038 | 7.617  | 0.152                                         | 0.457                                | 0.686                                            | 0.260                 | 0.000                                            | 0.000                                            | 0.000                                | 0.00              |
| 22-Jul                       | 17                                           | 7.600  | 18.103 | 8.093  | 0.162                                         | 0.486                                | 0.728                                            | 0.000                 | 0.000                                            | 0.000                                            | 0.000                                | 0.00              |
| 23-Jul                       | 22                                           | 9.835  | 23.428 | 10.473 | 0.209                                         | 0.628                                | 0.943                                            | 0.010                 | 0.000                                            | 0.000                                            | 0.000                                | 0.00              |
| 24-Jul                       | 14                                           | 6.259  | 14.908 | 6.665  | 0.133                                         | 0.400                                | 0.600                                            | 0.140                 | 0.000                                            | 0.000                                            | 0.000                                | 0.00              |
| 25-Jul                       | 24                                           | 10.729 | 25.557 | 11.425 | 0.229                                         | 0.686                                | 1.028                                            | 1.060                 | 0.000                                            | 0.000                                            | 0.000                                | 0.00              |
| 26-Jul                       | 23                                           | 10.282 | 24.492 | 10.949 | 0.219                                         | 0.657                                | 0.985                                            | 0.010                 | 0.000                                            | 0.000                                            | 0.000                                | 0.00              |
| 27-Jul                       | 18                                           | 8.047  | 19.168 | 8.569  | 0.171                                         | 0.514                                | 0.771                                            | 0.160                 | 0.000                                            | 0.000                                            | 0.000                                | 0.00              |
| 28-Jul                       | 16                                           | 7.153  | 17.038 | 7.617  | 0.152                                         | 0.457                                | 0.686                                            | 0.000                 | 0.000                                            | 0.000                                            | 0.000                                | 0.00              |
| 29-Jul                       | 18                                           | 8.047  | 19.168 | 8.569  | 0.171                                         | 0.514                                | 0.771                                            | 0.000                 | 0.000                                            | 0.000                                            | 0.000                                | 0.00              |
| 30-Jul                       | 16                                           | 7.153  | 17.038 | 7.617  | 0.152                                         | 0.457                                | 0.686                                            | 0.160                 | 0.000                                            | 0.000                                            | 0.000                                | 0.00              |
| 31-Jul                       | 16                                           | 7.153  | 17.038 | 7.617  | 0.152                                         | 0.457                                | 0.686                                            | 1.000                 | 0.000                                            | 0.000                                            | 0.000                                | 0.00              |
| 01-Aug                       | 21                                           | 9.388  | 22.363 | 9.997  | 0.200                                         | 0.600                                | 0.900                                            | 3.730                 | 0.000                                            | 0.000                                            | 0.000                                | 0.00              |
| 02-Aug                       | 20                                           | 8.941  | 21.298 | 9.521  | 0.190                                         | 0.571                                | 0.857                                            | 0.500                 | 0.000                                            | 0.000                                            | 0.000                                | 0.00              |
| 03-Aug                       | 24                                           | 10.729 | 25.557 | 11.425 | 0.229                                         | 0.686                                | 1.028                                            | 0.160                 | 0.000                                            | 0.000                                            | 0.000                                | 0.00              |
| 04-Aug                       | 16                                           | 7.153  | 17.038 | 7.617  | 0.152                                         | 0.457                                | 0.686                                            | 0.000                 | 0.000                                            | 0.000                                            | 0.000                                | 0.00              |
| 05-Aug                       | 13                                           | 5.812  | 13.844 | 6.189  | 0.124                                         | 0.371                                | 0.557                                            | 0.000                 | 0.000                                            | 0.000                                            | 0.000                                | 0.00              |
| 06-Aug                       | 21                                           | 9.388  | 22.363 | 9.997  | 0.200                                         | 0.600                                | 0.900                                            | 0.010                 | 0.000                                            | 0.000                                            | 0.000                                | 0.00              |
| 07-Aug                       | 18                                           | 8.047  | 19.168 | 8.569  | 0.171                                         | 0.514                                | 0.771                                            | 0.010                 | 0.000                                            | 0.000                                            | 0.000                                | 0.00              |
| 08-Aug                       | 20                                           | 8.941  | 21.298 | 9.521  | 0.190                                         | 0.571                                | 0.857                                            | 0.060                 | 0.000                                            | 0.000                                            | 0.000                                | 0.00              |



**FOSTER WHEELER ENVIRONMENTAL CORPORATION**  
**CALCULATION SHEET - EXCEL 5.0**

**By:** E. Deken, PE  
**Date:** 10/23/98  
**Ch'd By:** Darrel J. Graziani, P.E.  
**Date:** 11/07/98

**Cal. No.:** 981023ED01  
**Rev. No.:** SJRPP 4  
**OFS:** 7830.0020.0054

**Project:** JEA St. Johns Power Park

**Subject:** Fugitive Emission Estimates - Wind Erosion Petroleum Coke Storage Pile

**Assumptions:**

1. The threshold friction velocity was selected based on data available in AP-42, Section 13.2.5.
2. Roughness height was estimated based on largest values listed in AP-42, Section 13.2.5
3. Pile is always at maximum capacity which is maximizing emissions.

**References:**

1. AP-42, Section 13.2.5, Industrial Wind Erosion
2. 1997 Local Climatological Data, NOAA, National Climatic Data Center

**Erosion Potential Calculations**

Threshold Friction Velocity: **1.02**  
 Roughness Height (m) **0.003**

| Number<br>of<br>Disturbances | Fastest-Mile Values<br>Anemometer Height (m) |        |        |        | Equivalent Friction Velocities<br>$u^*=0.1u^*$<br>(m/s) |               |               | Rain Fall<br>(Inches) | Erosion Potential<br>(g/m^2) |                           |                           | Emissions<br>(lb) |
|------------------------------|----------------------------------------------|--------|--------|--------|---------------------------------------------------------|---------------|---------------|-----------------------|------------------------------|---------------------------|---------------------------|-------------------|
|                              | 6.1                                          |        | 10     |        | $u_a/u_t:0.2$                                           | $u_a/u_t:0.6$ | $u_a/u_t:0.9$ |                       | 36% Pile<br>$u_a/u_t:0.2$    | 50% Pile<br>$u_a/u_t:0.6$ | 14% Pile<br>$u_a/u_t:0.9$ |                   |
|                              | (mph)                                        | (m/s)  | (mph)  | (m/s)  |                                                         |               |               |                       |                              |                           |                           |                   |
| 09-Aug                       | 17                                           | 7.600  | 18.103 | 8.093  | 0.162                                                   | 0.486         | 0.728         | 0.020                 | 0.000                        | 0.000                     | 0.000                     | 0.00              |
| 10-Aug                       | 17                                           | 7.600  | 18.103 | 8.093  | 0.162                                                   | 0.486         | 0.728         | 0.220                 | 0.000                        | 0.000                     | 0.000                     | 0.00              |
| 11-Aug                       | 15                                           | 6.706  | 15.973 | 7.141  | 0.143                                                   | 0.428         | 0.643         | 0.005                 | 0.000                        | 0.000                     | 0.000                     | 0.00              |
| 12-Aug                       | 15                                           | 6.706  | 15.973 | 7.141  | 0.143                                                   | 0.428         | 0.643         | 0.000                 | 0.000                        | 0.000                     | 0.000                     | 0.00              |
| 13-Aug                       | 15                                           | 6.706  | 15.973 | 7.141  | 0.143                                                   | 0.428         | 0.643         | 0.450                 | 0.000                        | 0.000                     | 0.000                     | 0.00              |
| 14-Aug                       | 13                                           | 5.812  | 13.844 | 6.189  | 0.124                                                   | 0.371         | 0.557         | 0.010                 | 0.000                        | 0.000                     | 0.000                     | 0.00              |
| 15-Aug                       | 23                                           | 10.282 | 24.492 | 10.949 | 0.219                                                   | 0.657         | 0.985         | 0.005                 | 0.000                        | 0.000                     | 0.000                     | 0.00              |
| 16-Aug                       | 30                                           | 13.411 | 31.947 | 14.281 | 0.286                                                   | 0.857         | 1.285         | 0.710                 | 0.000                        | 0.000                     | 0.000                     | 0.00              |
| 17-Aug                       | 14                                           | 6.259  | 14.908 | 6.665  | 0.133                                                   | 0.400         | 0.600         | 0.000                 | 0.000                        | 0.000                     | 0.000                     | 0.00              |
| 18-Aug                       | 26                                           | 11.623 | 27.687 | 12.377 | 0.248                                                   | 0.743         | 1.114         | 0.270                 | 0.000                        | 0.000                     | 0.000                     | 0.00              |
| 19-Aug                       | 16                                           | 7.153  | 17.038 | 7.617  | 0.152                                                   | 0.457         | 0.686         | 0.240                 | 0.000                        | 0.000                     | 0.000                     | 0.00              |
| 20-Aug                       | 17                                           | 7.600  | 18.103 | 8.093  | 0.162                                                   | 0.486         | 0.728         | 0.000                 | 0.000                        | 0.000                     | 0.000                     | 0.00              |
| 21-Aug                       | 21                                           | 9.388  | 22.363 | 9.997  | 0.200                                                   | 0.600         | 0.900         | 0.160                 | 0.000                        | 0.000                     | 0.000                     | 0.00              |
| 22-Aug                       | 15                                           | 6.706  | 15.973 | 7.141  | 0.143                                                   | 0.428         | 0.643         | 0.000                 | 0.000                        | 0.000                     | 0.000                     | 0.00              |
| 23-Aug                       | 21                                           | 9.388  | 22.363 | 9.997  | 0.200                                                   | 0.600         | 0.900         | 0.020                 | 0.000                        | 0.000                     | 0.000                     | 0.00              |
| 24-Aug                       | 29                                           | 12.964 | 30.882 | 13.805 | 0.276                                                   | 0.828         | 1.242         | 1.590                 | 0.000                        | 0.000                     | 0.000                     | 0.00              |
| 25-Aug                       | 18                                           | 8.047  | 19.168 | 8.569  | 0.171                                                   | 0.514         | 0.771         | 0.000                 | 0.000                        | 0.000                     | 0.000                     | 0.00              |
| 26-Aug                       | 20                                           | 8.941  | 21.298 | 9.521  | 0.190                                                   | 0.571         | 0.857         | 0.000                 | 0.000                        | 0.000                     | 0.000                     | 0.00              |
| 27-Aug                       | 11                                           | 4.917  | 11.714 | 5.237  | 0.105                                                   | 0.314         | 0.471         | 0.000                 | 0.000                        | 0.000                     | 0.000                     | 0.00              |
| 28-Aug                       | 16                                           | 7.153  | 17.038 | 7.617  | 0.152                                                   | 0.457         | 0.686         | 0.000                 | 0.000                        | 0.000                     | 0.000                     | 0.00              |
| 29-Aug                       | 17                                           | 7.600  | 18.103 | 8.093  | 0.162                                                   | 0.486         | 0.728         | 0.000                 | 0.000                        | 0.000                     | 0.000                     | 0.00              |
| 30-Aug                       | 21                                           | 9.388  | 22.363 | 9.997  | 0.200                                                   | 0.600         | 0.900         | 0.080                 | 0.000                        | 0.000                     | 0.000                     | 0.00              |
| 31-Aug                       | 16                                           | 7.153  | 17.038 | 7.617  | 0.152                                                   | 0.457         | 0.686         | 0.000                 | 0.000                        | 0.000                     | 0.000                     | 0.00              |
| 01-Sep                       | 21                                           | 9.388  | 22.363 | 9.997  | 0.200                                                   | 0.600         | 0.900         | 0.005                 | 0.000                        | 0.000                     | 0.000                     | 0.00              |
| 02-Sep                       | 16                                           | 7.153  | 17.038 | 7.617  | 0.152                                                   | 0.457         | 0.686         | 0.130                 | 0.000                        | 0.000                     | 0.000                     | 0.00              |
| 03-Sep                       | 11                                           | 4.917  | 11.714 | 5.237  | 0.105                                                   | 0.314         | 0.471         | 0.000                 | 0.000                        | 0.000                     | 0.000                     | 0.00              |
| 04-Sep                       | 26                                           | 11.623 | 27.687 | 12.377 | 0.248                                                   | 0.743         | 1.114         | 0.005                 | 0.000                        | 0.000                     | 2.861                     | 76.76             |
| 05-Sep                       | 21                                           | 9.388  | 22.363 | 9.997  | 0.200                                                   | 0.600         | 0.900         | 0.000                 | 0.000                        | 0.000                     | 0.000                     | 0.00              |
| 06-Sep                       | 18                                           | 8.047  | 19.168 | 8.569  | 0.171                                                   | 0.514         | 0.771         | 0.000                 | 0.000                        | 0.000                     | 0.000                     | 0.00              |
| 07-Sep                       | 16                                           | 7.153  | 17.038 | 7.617  | 0.152                                                   | 0.457         | 0.686         | 0.000                 | 0.000                        | 0.000                     | 0.000                     | 0.00              |
| 08-Sep                       | 14                                           | 6.259  | 14.908 | 6.665  | 0.133                                                   | 0.400         | 0.600         | 0.000                 | 0.000                        | 0.000                     | 0.000                     | 0.00              |
| 09-Sep                       | 14                                           | 6.259  | 14.908 | 6.665  | 0.133                                                   | 0.400         | 0.600         | 0.000                 | 0.000                        | 0.000                     | 0.000                     | 0.00              |
| 10-Sep                       | 17                                           | 7.600  | 18.103 | 8.093  | 0.162                                                   | 0.486         | 0.728         | 0.005                 | 0.000                        | 0.000                     | 0.000                     | 0.00              |
| 11-Sep                       | 15                                           | 6.706  | 15.973 | 7.141  | 0.143                                                   | 0.428         | 0.643         | 0.000                 | 0.000                        | 0.000                     | 0.000                     | 0.00              |
| 12-Sep                       | 14                                           | 6.259  | 14.908 | 6.665  | 0.133                                                   | 0.400         | 0.600         | 0.000                 | 0.000                        | 0.000                     | 0.000                     | 0.00              |
| 13-Sep                       | 14                                           | 6.259  | 14.908 | 6.665  | 0.133                                                   | 0.400         | 0.600         | 0.000                 | 0.000                        | 0.000                     | 0.000                     | 0.00              |
| 14-Sep                       | 20                                           | 8.941  | 21.298 | 9.521  | 0.190                                                   | 0.571         | 0.857         | 0.030                 | 0.000                        | 0.000                     | 0.000                     | 0.00              |
| 15-Sep                       | 14                                           | 6.259  | 14.908 | 6.665  | 0.133                                                   | 0.400         | 0.600         | 0.000                 | 0.000                        | 0.000                     | 0.000                     | 0.00              |
| 16-Sep                       | 14                                           | 6.259  | 14.908 | 6.665  | 0.133                                                   | 0.400         | 0.600         | 0.000                 | 0.000                        | 0.000                     | 0.000                     | 0.00              |
| 17-Sep                       | 16                                           | 7.153  | 17.038 | 7.617  | 0.152                                                   | 0.457         | 0.686         | 0.000                 | 0.000                        | 0.000                     | 0.000                     | 0.00              |
| 18-Sep                       | 11                                           | 4.917  | 11.714 | 5.237  | 0.105                                                   | 0.314         | 0.471         | 0.000                 | 0.000                        | 0.000                     | 0.000                     | 0.00              |
| 19-Sep                       | 14                                           | 6.259  | 14.908 | 6.665  | 0.133                                                   | 0.400         | 0.600         | 0.000                 | 0.000                        | 0.000                     | 0.000                     | 0.00              |
| 20-Sep                       | 11                                           | 4.917  | 11.714 | 5.237  | 0.105                                                   | 0.314         | 0.471         | 0.000                 | 0.000                        | 0.000                     | 0.000                     | 0.00              |
| 21-Sep                       | 16                                           | 7.153  | 17.038 | 7.617  | 0.152                                                   | 0.457         | 0.686         | 0.000                 | 0.000                        | 0.000                     | 0.000                     | 0.00              |
| 22-Sep                       | 17                                           | 7.600  | 18.103 | 8.093  | 0.162                                                   | 0.486         | 0.728         | 0.000                 | 0.000                        | 0.000                     | 0.000                     | 0.00              |
| 23-Sep                       | 20                                           | 8.941  | 21.298 | 9.521  | 0.190                                                   | 0.571         | 0.857         | 0.180                 | 0.000                        | 0.000                     | 0.000                     | 0.00              |
| 24-Sep                       | 14                                           | 6.259  | 14.908 | 6.665  | 0.133                                                   | 0.400         | 0.600         | 1.000                 | 0.000                        | 0.000                     | 0.000                     | 0.00              |
| 25-Sep                       | 23                                           | 10.282 | 24.492 | 10.949 | 0.219                                                   | 0.657         | 0.985         | 0.280                 | 0.000                        | 0.000                     | 0.000                     | 0.00              |
| 26-Sep                       | 16                                           | 7.153  | 17.038 | 7.617  | 0.152                                                   | 0.457         | 0.686         | 1.080                 | 0.000                        | 0.000                     | 0.000                     | 0.00              |
| 27-Sep                       | 7                                            | 3.129  | 7.454  | 3.332  | 0.067                                                   | 0.200         | 0.300         | 2.250                 | 0.000                        | 0.000                     | 0.000                     | 0.00              |
| 28-Sep                       | 15                                           | 6.706  | 15.973 | 7.141  | 0.143                                                   | 0.428         | 0.643         | 0.010                 | 0.000                        | 0.000                     | 0.000                     | 0.00              |
| 29-Sep                       | 16                                           | 7.153  | 17.038 | 7.617  | 0.152                                                   | 0.457         | 0.686         | 0.000                 | 0.000                        | 0.000                     | 0.000                     | 0.00              |
| 30-Sep                       | 17                                           | 7.600  | 18.103 | 8.093  | 0.162                                                   | 0.486         | 0.728         | 0.000                 | 0.000                        | 0.000                     | 0.000                     | 0.00              |
| 01-Oct                       | 17                                           | 7.600  | 18.103 | 8.093  | 0.162                                                   | 0.486         | 0.728         | 0.000                 | 0.000                        | 0.000                     | 0.000                     | 0.00              |
| 02-Oct                       | 23                                           | 10.282 | 24.492 | 10.949 | 0.219                                                   | 0.657         | 0.985         | 0.000                 | 0.000                        | 0.000                     | 0.000                     | 0.00              |

**FOSTER WHEELER ENVIRONMENTAL CORPORATION  
CALCULATION SHEET - EXCEL 5.0**

By: E. Deken, PE  
Date: 10/23/98  
Ck'd By: Darrel J. Graziani, P.E.  
Date: 11/07/98

Cal. No.: 981023ED01  
Rev. No.: SJRPP 4  
OFS: 7830.0020.0054

**Project:** JEA St. Johns Power Park

**Subject:** Fugitive Emission Estimates - Wind Erosion Petroleum Coke Storage Pile

**Assumptions:**

1. The threshold friction velocity was selected based on data available in AP-42, Section 13.2.5.
2. Roughness height was estimated based on largest values listed in AP-42, Section 13.2.5
3. Pile is always at maximum capacity which is maximizing emissions.

**References:**

1. AP-42, Section 13.2.5, Industrial Wind Erosion
2. 1997 Local Climatological Data, NOAA, National Climatic Data Center

**Erosion Potential Calculations**

Threshold Friction Velocity: **1.02**  
Roughness Height (m) **0.003**

| Number<br>of<br>Disturbances | Fastest Mile Values<br>Anemometer Height (m) |        |        |        | Equivalent Friction Velocities<br>$u^*=0.1u^*$<br>(m/s) |               |               | Rain Fall<br>(Inches) | Erosion Potential<br>(g/m^2) |                           |                           | Emissions<br>(lb) |
|------------------------------|----------------------------------------------|--------|--------|--------|---------------------------------------------------------|---------------|---------------|-----------------------|------------------------------|---------------------------|---------------------------|-------------------|
|                              | 6.1                                          |        | 10     |        | $u_a/u_t:0.2$                                           | $u_a/u_t:0.6$ | $u_a/u_t:0.9$ |                       | 36% Pile<br>$u_a/u_t:0.2$    | 50% Pile<br>$u_a/u_t:0.6$ | 14% Pile<br>$u_a/u_t:0.9$ |                   |
|                              | (mph)                                        | (m/s)  | (mph)  | (m/s)  |                                                         |               |               |                       |                              |                           |                           |                   |
| 03-Oct                       | 17                                           | 7.600  | 18.103 | 8.093  | 0.162                                                   | 0.486         | 0.728         | 0.005                 | 0.000                        | 0.000                     | 0.000                     | 0.00              |
| 04-Oct                       | 21                                           | 9.388  | 22.363 | 9.997  | 0.200                                                   | 0.600         | 0.900         | 0.005                 | 0.000                        | 0.000                     | 0.000                     | 0.00              |
| 05-Oct                       | 20                                           | 8.941  | 21.298 | 9.521  | 0.190                                                   | 0.571         | 0.857         | 0.000                 | 0.000                        | 0.000                     | 0.000                     | 0.00              |
| 06-Oct                       | 15                                           | 6.706  | 15.973 | 7.141  | 0.143                                                   | 0.428         | 0.643         | 0.000                 | 0.000                        | 0.000                     | 0.000                     | 0.00              |
| 07-Oct                       | 18                                           | 8.047  | 19.168 | 8.569  | 0.171                                                   | 0.514         | 0.771         | 0.000                 | 0.000                        | 0.000                     | 0.000                     | 0.00              |
| 08-Oct                       | 21                                           | 9.388  | 22.363 | 9.997  | 0.200                                                   | 0.600         | 0.900         | 0.005                 | 0.000                        | 0.000                     | 0.000                     | 0.00              |
| 09-Oct                       | 23                                           | 10.282 | 24.492 | 10.949 | 0.219                                                   | 0.657         | 0.985         | 0.170                 | 0.000                        | 0.000                     | 0.000                     | 0.00              |
| 10-Oct                       | 21                                           | 9.388  | 22.363 | 9.997  | 0.200                                                   | 0.600         | 0.900         | 0.000                 | 0.000                        | 0.000                     | 0.000                     | 0.00              |
| 11-Oct                       | 20                                           | 8.941  | 21.298 | 9.521  | 0.190                                                   | 0.571         | 0.857         | 0.090                 | 0.000                        | 0.000                     | 0.000                     | 0.00              |
| 12-Oct                       | 20                                           | 8.941  | 21.298 | 9.521  | 0.190                                                   | 0.571         | 0.857         | 0.050                 | 0.000                        | 0.000                     | 0.000                     | 0.00              |
| 13-Oct                       | 15                                           | 6.706  | 15.973 | 7.141  | 0.143                                                   | 0.428         | 0.643         | 0.005                 | 0.000                        | 0.000                     | 0.000                     | 0.00              |
| 14-Oct                       | 13                                           | 5.812  | 13.844 | 6.189  | 0.124                                                   | 0.371         | 0.557         | 0.000                 | 0.000                        | 0.000                     | 0.000                     | 0.00              |
| 15-Oct                       | 15                                           | 6.706  | 15.973 | 7.141  | 0.143                                                   | 0.428         | 0.643         | 0.240                 | 0.000                        | 0.000                     | 0.000                     | 0.00              |
| 16-Oct                       | 16                                           | 7.153  | 17.038 | 7.617  | 0.152                                                   | 0.457         | 0.686         | 0.050                 | 0.000                        | 0.000                     | 0.000                     | 0.00              |
| 17-Oct                       | 11                                           | 4.917  | 11.714 | 5.237  | 0.105                                                   | 0.314         | 0.471         | 0.000                 | 0.000                        | 0.000                     | 0.000                     | 0.00              |
| 18-Oct                       | 14                                           | 6.259  | 14.908 | 6.665  | 0.133                                                   | 0.400         | 0.600         | 0.050                 | 0.000                        | 0.000                     | 0.000                     | 0.00              |
| 19-Oct                       | 20                                           | 8.941  | 21.298 | 9.521  | 0.190                                                   | 0.571         | 0.857         | 0.000                 | 0.000                        | 0.000                     | 0.000                     | 0.00              |
| 20-Oct                       | 15                                           | 6.706  | 15.973 | 7.141  | 0.143                                                   | 0.428         | 0.643         | 0.000                 | 0.000                        | 0.000                     | 0.000                     | 0.00              |
| 21-Oct                       | 10                                           | 4.470  | 10.649 | 4.760  | 0.095                                                   | 0.286         | 0.428         | 0.000                 | 0.000                        | 0.000                     | 0.000                     | 0.00              |
| 22-Oct                       | 14                                           | 6.259  | 14.908 | 6.665  | 0.133                                                   | 0.400         | 0.600         | 0.000                 | 0.000                        | 0.000                     | 0.000                     | 0.00              |
| 23-Oct                       | 14                                           | 6.259  | 14.908 | 6.665  | 0.133                                                   | 0.400         | 0.600         | 0.000                 | 0.000                        | 0.000                     | 0.000                     | 0.00              |
| 24-Oct                       | 20                                           | 8.941  | 21.298 | 9.521  | 0.190                                                   | 0.571         | 0.857         | 0.290                 | 0.000                        | 0.000                     | 0.000                     | 0.00              |
| 25-Oct                       | 11                                           | 4.917  | 11.714 | 5.237  | 0.105                                                   | 0.314         | 0.471         | 0.000                 | 0.000                        | 0.000                     | 0.000                     | 0.00              |
| 26-Oct                       | 22                                           | 9.835  | 23.428 | 10.473 | 0.209                                                   | 0.628         | 0.943         | 0.580                 | 0.000                        | 0.000                     | 0.000                     | 0.00              |
| 27-Oct                       | 22                                           | 9.835  | 23.428 | 10.473 | 0.209                                                   | 0.628         | 0.943         | 2.640                 | 0.000                        | 0.000                     | 0.000                     | 0.00              |
| 28-Oct                       | 14                                           | 6.259  | 14.908 | 6.665  | 0.133                                                   | 0.400         | 0.600         | 0.000                 | 0.000                        | 0.000                     | 0.000                     | 0.00              |
| 29-Oct                       | 10                                           | 4.470  | 10.649 | 4.760  | 0.095                                                   | 0.286         | 0.428         | 0.000                 | 0.000                        | 0.000                     | 0.000                     | 0.00              |
| 30-Oct                       | 13                                           | 5.812  | 13.844 | 6.189  | 0.124                                                   | 0.371         | 0.557         | 0.000                 | 0.000                        | 0.000                     | 0.000                     | 0.00              |
| 31-Oct                       | 13                                           | 5.812  | 13.844 | 6.189  | 0.124                                                   | 0.371         | 0.557         | 0.680                 | 0.000                        | 0.000                     | 0.000                     | 0.00              |
| 01-Nov                       | 16                                           | 7.153  | 17.038 | 7.617  | 0.152                                                   | 0.457         | 0.686         | 0.000                 | 0.000                        | 0.000                     | 0.000                     | 0.00              |
| 02-Nov                       | 21                                           | 9.388  | 22.363 | 9.997  | 0.200                                                   | 0.600         | 0.900         | 0.180                 | 0.000                        | 0.000                     | 0.000                     | 0.00              |
| 03-Nov                       | 21                                           | 9.388  | 22.363 | 9.997  | 0.200                                                   | 0.600         | 0.900         | 0.000                 | 0.000                        | 0.000                     | 0.000                     | 0.00              |
| 04-Nov                       | 14                                           | 6.259  | 14.908 | 6.665  | 0.133                                                   | 0.400         | 0.600         | 0.000                 | 0.000                        | 0.000                     | 0.000                     | 0.00              |
| 05-Nov                       | 17                                           | 7.600  | 18.103 | 8.093  | 0.162                                                   | 0.486         | 0.728         | 0.000                 | 0.000                        | 0.000                     | 0.000                     | 0.00              |
| 06-Nov                       | 11                                           | 4.917  | 11.714 | 5.237  | 0.105                                                   | 0.314         | 0.471         | 0.005                 | 0.000                        | 0.000                     | 0.000                     | 0.00              |
| 07-Nov                       | 17                                           | 7.600  | 18.103 | 8.093  | 0.162                                                   | 0.486         | 0.728         | 0.150                 | 0.000                        | 0.000                     | 0.000                     | 0.00              |
| 08-Nov                       | 18                                           | 8.047  | 19.168 | 8.569  | 0.171                                                   | 0.514         | 0.771         | 0.000                 | 0.000                        | 0.000                     | 0.000                     | 0.00              |
| 09-Nov                       | 15                                           | 6.706  | 15.973 | 7.141  | 0.143                                                   | 0.428         | 0.643         | 0.000                 | 0.000                        | 0.000                     | 0.000                     | 0.00              |
| 10-Nov                       | 16                                           | 7.153  | 17.038 | 7.617  | 0.152                                                   | 0.457         | 0.686         | 0.000                 | 0.000                        | 0.000                     | 0.000                     | 0.00              |
| 11-Nov                       | 13                                           | 5.812  | 13.844 | 6.189  | 0.124                                                   | 0.371         | 0.557         | 0.000                 | 0.000                        | 0.000                     | 0.000                     | 0.00              |
| 12-Nov                       | 15                                           | 6.706  | 15.973 | 7.141  | 0.143                                                   | 0.428         | 0.643         | 0.280                 | 0.000                        | 0.000                     | 0.000                     | 0.00              |
| 13-Nov                       | 16                                           | 7.153  | 17.038 | 7.617  | 0.152                                                   | 0.457         | 0.686         | 0.650                 | 0.000                        | 0.000                     | 0.000                     | 0.00              |
| 14-Nov                       | 28                                           | 12.517 | 29.817 | 13.329 | 0.267                                                   | 0.800         | 1.200         | 0.000                 | 0.000                        | 0.000                     | 6.363                     | 170.72            |
| 15-Nov                       | 13                                           | 5.812  | 13.844 | 6.189  | 0.124                                                   | 0.371         | 0.557         | 0.000                 | 0.000                        | 0.000                     | 0.000                     | 0.00              |
| 16-Nov                       | 14                                           | 6.259  | 14.908 | 6.665  | 0.133                                                   | 0.400         | 0.600         | 0.005                 | 0.000                        | 0.000                     | 0.000                     | 0.00              |
| 17-Nov                       | 15                                           | 6.706  | 15.973 | 7.141  | 0.143                                                   | 0.428         | 0.643         | 0.000                 | 0.000                        | 0.000                     | 0.000                     | 0.00              |
| 18-Nov                       | 13                                           | 5.812  | 13.844 | 6.189  | 0.124                                                   | 0.371         | 0.557         | 0.000                 | 0.000                        | 0.000                     | 0.000                     | 0.00              |
| 19-Nov                       | 8                                            | 3.576  | 8.519  | 3.808  | 0.076                                                   | 0.229         | 0.343         | 0.005                 | 0.000                        | 0.000                     | 0.000                     | 0.00              |
| 20-Nov                       | 14                                           | 6.259  | 14.908 | 6.665  | 0.133                                                   | 0.400         | 0.600         | 0.000                 | 0.000                        | 0.000                     | 0.000                     | 0.00              |
| 21-Nov                       | 14                                           | 6.259  | 14.908 | 6.665  | 0.133                                                   | 0.400         | 0.600         | 0.000                 | 0.000                        | 0.000                     | 0.000                     | 0.00              |
| 22-Nov                       | 14                                           | 6.259  | 14.908 | 6.665  | 0.133                                                   | 0.400         | 0.600         | 0.000                 | 0.000                        | 0.000                     | 0.000                     | 0.00              |
| 23-Nov                       | 13                                           | 5.812  | 13.844 | 6.189  | 0.124                                                   | 0.371         | 0.557         | 0.005                 | 0.000                        | 0.000                     | 0.000                     | 0.00              |
| 24-Nov                       | 15                                           | 6.706  | 15.973 | 7.141  | 0.143                                                   | 0.428         | 0.643         | 0.000                 | 0.000                        | 0.000                     | 0.000                     | 0.00              |
| 25-Nov                       | 18                                           | 8.047  | 19.168 | 8.569  | 0.171                                                   | 0.514         | 0.771         | 0.000                 | 0.000                        | 0.000                     | 0.000                     | 0.00              |
| 26-Nov                       | 14                                           | 6.259  | 14.908 | 6.665  | 0.133                                                   | 0.400         | 0.600         | 0.000                 | 0.000                        | 0.000                     | 0.000                     | 0.00              |

**FOSTER WHEELER ENVIRONMENTAL CORPORATION**  
**CALCULATION SHEET - EXCEL 5.0**

**By: E. Deken, PE**  
**Date:** 10/23/98  
**Ch'd By:** Darrel J. Graziani, P.E.  
**Date:** 11/07/98

**Cal. No.:** 981023ED01  
**Rev. No.:** SJRPP 4  
**OFS:** 7830.0020.0054

**Project:** JEA St. Johns Power Park

**Subject:** Fugitive Emission Estimates - Wind Erosion Petroleum Coke Storage Pile

**Assumptions:**

1. The threshold friction velocity was selected based on data available in AP-42, Section 13.2.5.
2. Roughness height was estimated based on largest values listed in AP-42, Section 13.2.5
3. Pile is always at maximum capacity which is maximizing emissions.

**References:**

1. AP-42, Section 13.2.5, Industrial Wind Erosion
2. 1997 Local Climatological Data, NOAA, National Climatic Data Center

**Erosion Potential Calculations**

Threshold Friction Velocity: **1.02**  
 Roughness Height (m) **0.003**

| Number<br>of<br>Disturbances | Fastest Mile Values<br>Anemometer Height (m) |        |        |        | Equivalent Friction Velocities<br>$u^*=0.1u$ |               |               | Rain Fall<br>(inches) | Erosion Potential<br>(g/m <sup>2</sup> ) |               |               | Emissions<br>(lb) |
|------------------------------|----------------------------------------------|--------|--------|--------|----------------------------------------------|---------------|---------------|-----------------------|------------------------------------------|---------------|---------------|-------------------|
|                              | 6.1                                          |        | 10     |        | $u^*/u_*$                                    |               |               |                       | 36% Pile                                 | 50% Pile      | 14% Pile      |                   |
|                              | (mph)                                        | (m/s)  | (mph)  | (m/s)  | $u_*/u_*,0.2$                                | $u_*/u_*,0.6$ | $u_*/u_*,0.9$ |                       | $u_*/u_*,0.2$                            | $u_*/u_*,0.6$ | $u_*/u_*,0.9$ |                   |
| 27-Nov                       | 15                                           | 6.706  | 15.973 | 7.141  | 0.143                                        | 0.428         | 0.643         | 0.000                 | 0.000                                    | 0.000         | 0.000         | 0.00              |
| 28-Nov                       | 9                                            | 4.023  | 9.584  | 4.284  | 0.086                                        | 0.257         | 0.386         | 0.005                 | 0.000                                    | 0.000         | 0.000         | 0.00              |
| 29-Nov                       | 25                                           | 11.176 | 26.622 | 11.901 | 0.238                                        | 0.714         | 1.071         | 1.130                 | 0.000                                    | 0.000         | 0.000         | 0.00              |
| 30-Nov                       | 21                                           | 9.388  | 22.363 | 9.997  | 0.200                                        | 0.600         | 0.900         | 0.020                 | 0.000                                    | 0.000         | 0.000         | 0.00              |
| 01-Dec                       | 20                                           | 8.941  | 21.298 | 9.521  | 0.190                                        | 0.571         | 0.857         | 0.000                 | 0.000                                    | 0.000         | 0.000         | 0.00              |
| 02-Dec                       | 16                                           | 7.153  | 17.038 | 7.617  | 0.152                                        | 0.457         | 0.686         | 0.000                 | 0.000                                    | 0.000         | 0.000         | 0.00              |
| 03-Dec                       | 15                                           | 6.706  | 15.973 | 7.141  | 0.143                                        | 0.428         | 0.643         | 0.100                 | 0.000                                    | 0.000         | 0.000         | 0.00              |
| 04-Dec                       | 21                                           | 9.388  | 22.363 | 9.997  | 0.200                                        | 0.600         | 0.900         | 0.100                 | 0.000                                    | 0.000         | 0.000         | 0.00              |
| 05-Dec                       | 20                                           | 8.941  | 21.298 | 9.521  | 0.190                                        | 0.571         | 0.857         | 0.000                 | 0.000                                    | 0.000         | 0.000         | 0.00              |
| 06-Dec                       | 20                                           | 8.941  | 21.298 | 9.521  | 0.190                                        | 0.571         | 0.857         | 0.000                 | 0.000                                    | 0.000         | 0.000         | 0.00              |
| 07-Dec                       | 11                                           | 4.917  | 11.714 | 5.237  | 0.105                                        | 0.314         | 0.471         | 0.000                 | 0.000                                    | 0.000         | 0.000         | 0.00              |
| 08-Dec                       | 14                                           | 6.259  | 14.908 | 6.665  | 0.133                                        | 0.400         | 0.600         | 0.060                 | 0.000                                    | 0.000         | 0.000         | 0.00              |
| 09-Dec                       | 11                                           | 4.917  | 11.714 | 5.237  | 0.105                                        | 0.314         | 0.471         | 0.110                 | 0.000                                    | 0.000         | 0.000         | 0.00              |
| 10-Dec                       | 37                                           | 16.540 | 39.401 | 17.614 | 0.352                                        | 1.057         | 1.585         | 2.860                 | 0.000                                    | 0.000         | 0.000         | 0.00              |
| 11-Dec                       | 15                                           | 6.706  | 15.973 | 7.141  | 0.143                                        | 0.428         | 0.643         | 0.005                 | 0.000                                    | 0.000         | 0.000         | 0.00              |
| 12-Dec                       | 21                                           | 9.388  | 22.363 | 9.997  | 0.200                                        | 0.600         | 0.900         | 2.720                 | 0.000                                    | 0.000         | 0.000         | 0.00              |
| 13-Dec                       | 13                                           | 5.812  | 13.844 | 6.189  | 0.124                                        | 0.371         | 0.557         | 0.300                 | 0.000                                    | 0.000         | 0.000         | 0.00              |
| 14-Dec                       | 20                                           | 8.941  | 21.298 | 9.521  | 0.190                                        | 0.571         | 0.857         | 1.370                 | 0.000                                    | 0.000         | 0.000         | 0.00              |
| 15-Dec                       | 26                                           | 11.623 | 27.687 | 12.377 | 0.248                                        | 0.743         | 1.114         | 1.590                 | 0.000                                    | 0.000         | 0.000         | 0.00              |
| 16-Dec                       | 17                                           | 7.600  | 18.103 | 8.093  | 0.162                                        | 0.486         | 0.728         | 0.000                 | 0.000                                    | 0.000         | 0.000         | 0.00              |
| 17-Dec                       | 14                                           | 6.259  | 14.908 | 6.665  | 0.133                                        | 0.400         | 0.600         | 0.000                 | 0.000                                    | 0.000         | 0.000         | 0.00              |
| 18-Dec                       | 13                                           | 5.812  | 13.844 | 6.189  | 0.124                                        | 0.371         | 0.557         | 0.000                 | 0.000                                    | 0.000         | 0.000         | 0.00              |
| 19-Dec                       | 7                                            | 3.129  | 7.454  | 3.332  | 0.067                                        | 0.200         | 0.300         | 0.000                 | 0.000                                    | 0.000         | 0.000         | 0.00              |
| 20-Dec                       | 13                                           | 5.812  | 13.844 | 6.189  | 0.124                                        | 0.371         | 0.557         | 0.000                 | 0.000                                    | 0.000         | 0.000         | 0.00              |
| 21-Dec                       | 14                                           | 6.259  | 14.908 | 6.665  | 0.133                                        | 0.400         | 0.600         | 0.000                 | 0.000                                    | 0.000         | 0.000         | 0.00              |
| 22-Dec                       | 16                                           | 7.153  | 17.038 | 7.617  | 0.152                                        | 0.457         | 0.686         | 0.010                 | 0.000                                    | 0.000         | 0.000         | 0.00              |
| 23-Dec                       | 13                                           | 5.812  | 13.844 | 6.189  | 0.124                                        | 0.371         | 0.557         | 0.030                 | 0.000                                    | 0.000         | 0.000         | 0.00              |
| 24-Dec                       | 15                                           | 6.706  | 15.973 | 7.141  | 0.143                                        | 0.428         | 0.643         | 0.190                 | 0.000                                    | 0.000         | 0.000         | 0.00              |
| 25-Dec                       | 14                                           | 6.259  | 14.908 | 6.665  | 0.133                                        | 0.400         | 0.600         | 0.090                 | 0.000                                    | 0.000         | 0.000         | 0.00              |
| 26-Dec                       | 13                                           | 5.812  | 13.844 | 6.189  | 0.124                                        | 0.371         | 0.557         | 0.170                 | 0.000                                    | 0.000         | 0.000         | 0.00              |
| 27-Dec                       | 25                                           | 11.176 | 26.622 | 11.901 | 0.238                                        | 0.714         | 1.071         | 0.040                 | 0.000                                    | 0.000         | 0.000         | 0.00              |
| 28-Dec                       | 13                                           | 5.812  | 13.844 | 6.189  | 0.124                                        | 0.371         | 0.557         | 0.000                 | 0.000                                    | 0.000         | 0.000         | 0.00              |
| 29-Dec                       | 26                                           | 11.623 | 27.687 | 12.377 | 0.248                                        | 0.743         | 1.114         | 0.030                 | 0.000                                    | 0.000         | 0.000         | 0.00              |
| 30-Dec                       | 26                                           | 11.623 | 27.687 | 12.377 | 0.248                                        | 0.743         | 1.114         | 0.000                 | 0.000                                    | 0.000         | 2.861         | 76.76             |
| 31-Dec                       | 25                                           | 11.176 | 26.622 | 11.901 | 0.238                                        | 0.714         | 1.071         | 0.000                 | 0.000                                    | 0.000         | 1.429         | 38.35             |
| Totals:                      |                                              |        |        |        |                                              |               |               | 0.00                  | 0.00                                     | 30.94         | 830.10        |                   |
| Worst Case Day               |                                              |        |        |        |                                              |               |               | 0.000                 | 0.000                                    | 6.363         |               |                   |

**Storage Pile Calculations**

Control Efficiency 90.00%  
 Rain Days (>0.01") 120 AP42, Section 13.2.2  
 Storage Pile Surface Area 87007.49  
 Uncontrolled (TPY) 0.42  
 Controlled (TPY) 0.04  
 Worst Case Day (lb/24-hr) 17 PM10 - AP42 Section 13.2.5  
 Worst Case Day (gps) 0.09 Per AP42, Section 13.2.5  
 #Days Winds>12 MPH 343  
 #Days Rain >0.01 " 130  
 Worst Case Day (gps) 0.107 Per EPA Background Document

**FOSTER WHEELER ENVIRONMENTAL CORPORATION  
CALCULATION SHEET - EXCEL 5.0**

**By:** E. Deken, PE  
**Date:** 10/23/98  
**Cl'd By:** Darrel J. Graziani, P.E.  
**Date:** 11/07/98

**Cal. No.:** 981023ED01  
**Rev. No.:** SJRPP 1  
**OFS:** 7830.0020.0054

**Project:** JEA St. Johns Power Park

**Subject:** Fugitive Emission Estimates - Wind Erosion Gypsum Storage Pile, Non-Commercial Materials

**Assumptions:**

1. The threshold friction velocity was selected based on data available in AP-42, Section 13.2.5.
2. Roughness height was estimated based on largest values listed in AP-42, Section 13.2.5
3. Pile is always at maximum capacity which is maximizing emissions.

**References:**

1. AP-42, Section 13.2.5, Industrial Wind Erosion
2. 1997 Local Climatological Data, NOAA, National Climatic Data Center

**Erosion Potential Calculations**

Threshold Friction Velocity: **1.02**  
Roughness Height (m) **0.003**

| Number<br>of<br>Disturbances | Fastest Mile Values<br>Anemometer Height (m) |        |        |        | Equivalent Friction Velocities<br>$u^*=0.1u^*$<br>(m/s) |               |               | Rain Fall<br>(Inches) | Erosion Potential<br>(g/m^2) |               |               | Emissions<br>(lb) |
|------------------------------|----------------------------------------------|--------|--------|--------|---------------------------------------------------------|---------------|---------------|-----------------------|------------------------------|---------------|---------------|-------------------|
|                              | 6:1                                          |        | 10     |        | $u_s/u_t:0.2$ $u_s/u_t:0.6$ $u_s/u_t:0.9$               |               |               |                       | 36% Pile                     | 50% Pile      | 14% Pile      |                   |
|                              | (mph)                                        | (m/s)  | (mph)  | (m/s)  | $u_s/u_t:0.2$                                           | $u_s/u_t:0.6$ | $u_s/u_t:0.9$ |                       | $u_s/u_t:0.2$                | $u_s/u_t:0.6$ | $u_s/u_t:0.9$ |                   |
| 01-Jan                       | 15                                           | 6.706  | 15.973 | 7.141  | 0.143                                                   | 0.428         | 0.643         | 0.000                 | 0.000                        | 0.000         | 0.000         | 0.00              |
| 02-Jan                       | 14                                           | 6.259  | 14.908 | 6.665  | 0.133                                                   | 0.400         | 0.600         | 0.000                 | 0.000                        | 0.000         | 0.000         | 0.00              |
| 03-Jan                       | 16                                           | 7.153  | 17.038 | 7.617  | 0.152                                                   | 0.457         | 0.686         | 0.000                 | 0.000                        | 0.000         | 0.000         | 0.00              |
| 04-Jan                       | 15                                           | 6.706  | 15.973 | 7.141  | 0.143                                                   | 0.428         | 0.643         | 0.000                 | 0.000                        | 0.000         | 0.000         | 0.00              |
| 05-Jan                       | 22                                           | 9.835  | 23.428 | 10.473 | 0.209                                                   | 0.628         | 0.943         | 0.120                 | 0.000                        | 0.000         | 0.000         | 0.00              |
| 06-Jan                       | 9                                            | 4.023  | 9.584  | 4.284  | 0.086                                                   | 0.257         | 0.386         | 0.280                 | 0.000                        | 0.000         | 0.000         | 0.00              |
| 07-Jan                       | 14                                           | 6.259  | 14.908 | 6.665  | 0.133                                                   | 0.400         | 0.600         | 0.030                 | 0.000                        | 0.000         | 0.000         | 0.00              |
| 08-Jan                       | 17                                           | 7.600  | 18.103 | 8.093  | 0.162                                                   | 0.486         | 0.728         | 0.040                 | 0.000                        | 0.000         | 0.000         | 0.00              |
| 09-Jan                       | 20                                           | 8.941  | 21.298 | 9.521  | 0.190                                                   | 0.571         | 0.857         | 0.600                 | 0.000                        | 0.000         | 0.000         | 0.00              |
| 10-Jan                       | 26                                           | 11.623 | 27.687 | 12.377 | 0.248                                                   | 0.743         | 1.114         | 0.000                 | 0.000                        | 0.000         | 2.861         | 5.36              |
| 11-Jan                       | 14                                           | 6.259  | 14.908 | 6.665  | 0.133                                                   | 0.400         | 0.600         | 0.000                 | 0.000                        | 0.000         | 0.000         | 0.00              |
| 12-Jan                       | 10                                           | 4.470  | 10.649 | 4.760  | 0.095                                                   | 0.286         | 0.428         | 0.000                 | 0.000                        | 0.000         | 0.000         | 0.00              |
| 13-Jan                       | 15                                           | 6.706  | 15.973 | 7.141  | 0.143                                                   | 0.428         | 0.643         | 0.000                 | 0.000                        | 0.000         | 0.000         | 0.00              |
| 14-Jan                       | 20                                           | 8.941  | 21.298 | 9.521  | 0.190                                                   | 0.571         | 0.857         | 0.000                 | 0.000                        | 0.000         | 0.000         | 0.00              |
| 15-Jan                       | 16                                           | 7.153  | 17.038 | 7.617  | 0.152                                                   | 0.457         | 0.686         | 0.005                 | 0.000                        | 0.000         | 0.000         | 0.00              |
| 16-Jan                       | 23                                           | 10.282 | 24.492 | 10.949 | 0.219                                                   | 0.657         | 0.985         | 0.330                 | 0.000                        | 0.000         | 0.000         | 0.00              |
| 17-Jan                       | 24                                           | 10.729 | 25.557 | 11.425 | 0.229                                                   | 0.686         | 1.028         | 0.000                 | 0.000                        | 0.000         | 0.211         | 0.39              |
| 18-Jan                       | 21                                           | 9.388  | 22.363 | 9.997  | 0.200                                                   | 0.600         | 0.900         | 0.000                 | 0.000                        | 0.000         | 0.000         | 0.00              |
| 19-Jan                       | 17                                           | 7.600  | 18.103 | 8.093  | 0.162                                                   | 0.486         | 0.728         | 0.000                 | 0.000                        | 0.000         | 0.000         | 0.00              |
| 20-Jan                       | 15                                           | 6.706  | 15.973 | 7.141  | 0.143                                                   | 0.428         | 0.643         | 0.000                 | 0.000                        | 0.000         | 0.000         | 0.00              |
| 21-Jan                       | 16                                           | 7.153  | 17.038 | 7.617  | 0.152                                                   | 0.457         | 0.686         | 0.000                 | 0.000                        | 0.000         | 0.000         | 0.00              |
| 22-Jan                       | 22                                           | 9.835  | 23.428 | 10.473 | 0.209                                                   | 0.628         | 0.943         | 0.000                 | 0.000                        | 0.000         | 0.000         | 0.00              |
| 23-Jan                       | 15                                           | 6.706  | 15.973 | 7.141  | 0.143                                                   | 0.428         | 0.643         | 0.005                 | 0.000                        | 0.000         | 0.000         | 0.00              |
| 24-Jan                       | 18                                           | 8.047  | 19.168 | 8.569  | 0.171                                                   | 0.514         | 0.771         | 0.000                 | 0.000                        | 0.000         | 0.000         | 0.00              |
| 25-Jan                       | 18                                           | 8.047  | 19.168 | 8.569  | 0.171                                                   | 0.514         | 0.771         | 1.200                 | 0.000                        | 0.000         | 0.000         | 0.00              |
| 26-Jan                       | 17                                           | 7.600  | 18.103 | 8.093  | 0.162                                                   | 0.486         | 0.728         | 0.000                 | 0.000                        | 0.000         | 0.000         | 0.00              |
| 27-Jan                       | 18                                           | 8.047  | 19.168 | 8.569  | 0.171                                                   | 0.514         | 0.771         | 0.000                 | 0.000                        | 0.000         | 0.000         | 0.00              |
| 28-Jan                       | 17                                           | 7.600  | 18.103 | 8.093  | 0.162                                                   | 0.486         | 0.728         | 0.000                 | 0.000                        | 0.000         | 0.000         | 0.00              |
| 29-Jan                       | 22                                           | 9.835  | 23.428 | 10.473 | 0.209                                                   | 0.628         | 0.943         | 0.000                 | 0.000                        | 0.000         | 0.000         | 0.00              |
| 30-Jan                       | 15                                           | 6.706  | 15.973 | 7.141  | 0.143                                                   | 0.428         | 0.643         | 0.310                 | 0.000                        | 0.000         | 0.000         | 0.00              |
| 31-Jan                       | 15                                           | 6.706  | 15.973 | 7.141  | 0.143                                                   | 0.428         | 0.643         | 0.000                 | 0.000                        | 0.000         | 0.000         | 0.00              |
| 01-Feb                       | 21                                           | 9.388  | 22.363 | 9.997  | 0.200                                                   | 0.600         | 0.900         | 0.000                 | 0.000                        | 0.000         | 0.000         | 0.00              |
| 02-Feb                       | 10                                           | 4.470  | 10.649 | 4.760  | 0.095                                                   | 0.286         | 0.428         | 0.000                 | 0.000                        | 0.000         | 0.000         | 0.00              |
| 03-Feb                       | 13                                           | 5.812  | 13.844 | 6.189  | 0.124                                                   | 0.371         | 0.557         | 0.000                 | 0.000                        | 0.000         | 0.000         | 0.00              |
| 04-Feb                       | 15                                           | 6.706  | 15.973 | 7.141  | 0.143                                                   | 0.428         | 0.643         | 0.000                 | 0.000                        | 0.000         | 0.000         | 0.00              |
| 05-Feb                       | 17                                           | 7.600  | 18.103 | 8.093  | 0.162                                                   | 0.486         | 0.728         | 0.000                 | 0.000                        | 0.000         | 0.000         | 0.00              |
| 06-Feb                       | 14                                           | 6.259  | 14.908 | 6.665  | 0.133                                                   | 0.400         | 0.600         | 0.000                 | 0.000                        | 0.000         | 0.000         | 0.00              |
| 07-Feb                       | 11                                           | 4.917  | 11.714 | 5.237  | 0.105                                                   | 0.314         | 0.471         | 0.000                 | 0.000                        | 0.000         | 0.000         | 0.00              |
| 08-Feb                       | 21                                           | 9.388  | 22.363 | 9.997  | 0.200                                                   | 0.600         | 0.900         | 0.030                 | 0.000                        | 0.000         | 0.000         | 0.00              |
| 09-Feb                       | 16                                           | 7.153  | 17.038 | 7.617  | 0.152                                                   | 0.457         | 0.686         | 0.005                 | 0.000                        | 0.000         | 0.000         | 0.00              |
| 10-Feb                       | 11                                           | 4.917  | 11.714 | 5.237  | 0.105                                                   | 0.314         | 0.471         | 0.005                 | 0.000                        | 0.000         | 0.000         | 0.00              |
| 11-Feb                       | 10                                           | 4.470  | 10.649 | 4.760  | 0.095                                                   | 0.286         | 0.428         | 0.000                 | 0.000                        | 0.000         | 0.000         | 0.00              |
| 12-Feb                       | 14                                           | 6.259  | 14.908 | 6.665  | 0.133                                                   | 0.400         | 0.600         | 0.000                 | 0.000                        | 0.000         | 0.000         | 0.00              |
| 13-Feb                       | 18                                           | 8.047  | 19.168 | 8.569  | 0.171                                                   | 0.514         | 0.771         | 0.130                 | 0.000                        | 0.000         | 0.000         | 0.00              |
| 14-Feb                       | 18                                           | 8.047  | 19.168 | 8.569  | 0.171                                                   | 0.514         | 0.771         | 0.040                 | 0.000                        | 0.000         | 0.000         | 0.00              |
| 15-Feb                       | 18                                           | 8.047  | 19.168 | 8.569  | 0.171                                                   | 0.514         | 0.771         | 0.400                 | 0.000                        | 0.000         | 0.000         | 0.00              |
| 16-Feb                       | 15                                           | 6.706  | 15.973 | 7.141  | 0.143                                                   | 0.428         | 0.643         | 0.000                 | 0.000                        | 0.000         | 0.000         | 0.00              |
| 17-Feb                       | 20                                           | 8.941  | 21.298 | 9.521  | 0.190                                                   | 0.571         | 0.857         | 0.000                 | 0.000                        | 0.000         | 0.000         | 0.00              |
| 18-Feb                       | 16                                           | 7.153  | 17.038 | 7.617  | 0.152                                                   | 0.457         | 0.686         | 0.000                 | 0.000                        | 0.000         | 0.000         | 0.00              |
| 19-Feb                       | 14                                           | 6.259  | 14.908 | 6.665  | 0.133                                                   | 0.400         | 0.600         | 0.005                 | 0.000                        | 0.000         | 0.000         | 0.00              |
| 20-Feb                       | 20                                           | 8.941  | 21.298 | 9.521  | 0.190                                                   | 0.571         | 0.857         | 0.000                 | 0.000                        | 0.000         | 0.000         | 0.00              |
| 21-Feb                       | 24                                           | 10.729 | 25.557 | 11.425 | 0.229                                                   | 0.686         | 1.028         | 0.000                 | 0.000                        | 0.000         | 0.211         | 0.39              |
| 22-Feb                       | 17                                           | 7.600  | 18.103 | 8.093  | 0.162                                                   | 0.486         | 0.728         | 0.310                 | 0.000                        | 0.000         | 0.000         | 0.00              |
| 23-Feb                       | 18                                           | 8.047  | 19.168 | 8.569  | 0.171                                                   | 0.514         | 0.771         | 0.005                 | 0.000                        | 0.000         | 0.000         | 0.00              |
| 24-Feb                       | 18                                           | 8.047  | 19.168 | 8.569  | 0.171                                                   | 0.514         | 0.771         | 0.140                 | 0.000                        | 0.000         | 0.000         | 0.00              |

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**Assumptions:**

1. The threshold friction velocity was selected based on data available in AP-42, Section 13.2.5.
2. Roughness height was estimated based on largest values listed in AP-42, Section 13.2.5
3. Pile is always at maximum capacity which is maximizing emissions.

**References:**

1. AP-42, Section 13.2.5, Industrial Wind Erosion
2. 1997 Local Climatological Data, NOAA, National Climatic Data Center

**Erosion Potential Calculations**

Threshold Friction Velocity:

1.02

Roughness Height (m)

0.003

| Number<br>of<br>Disturbances | Fastest Mile Values<br>Anemometer Height (m) |        |        |        | Equivalent Friction Velocities<br>$u^* = 0.1u^*$<br>(m/s) |                |                | Rain Fall<br>(Inches) | Erosion Potential<br>(g/m <sup>2</sup> ) |                            |                            | Emissions<br>(lb) |
|------------------------------|----------------------------------------------|--------|--------|--------|-----------------------------------------------------------|----------------|----------------|-----------------------|------------------------------------------|----------------------------|----------------------------|-------------------|
|                              | 6.1                                          |        | 10     |        | $u_a/u_{*0.2}$                                            | $u_a/u_{*0.6}$ | $u_a/u_{*0.9}$ |                       |                                          |                            |                            |                   |
|                              | (mph)                                        | (m/s)  | (mph)  | (m/s)  |                                                           |                |                |                       | 36% Pile<br>$u_a/u_{*0.2}$               | 50% Pile<br>$u_a/u_{*0.6}$ | 14% Pile<br>$u_a/u_{*0.9}$ |                   |
| 25-Feb                       | 21                                           | 9.388  | 22.363 | 9.997  | 0.200                                                     | 0.600          | 0.900          | 0.230                 | 0.000                                    | 0.000                      | 0.000                      | 0.00              |
| 26-Feb                       | 15                                           | 6.706  | 15.973 | 7.141  | 0.143                                                     | 0.428          | 0.643          | 0.000                 | 0.000                                    | 0.000                      | 0.000                      | 0.00              |
| 27-Feb                       | 20                                           | 8.941  | 21.298 | 9.521  | 0.190                                                     | 0.571          | 0.857          | 0.000                 | 0.000                                    | 0.000                      | 0.000                      | 0.00              |
| 28-Feb                       | 20                                           | 8.941  | 21.298 | 9.521  | 0.190                                                     | 0.571          | 0.857          | 0.000                 | 0.000                                    | 0.000                      | 0.000                      | 0.00              |
| 01-Mar                       | 20                                           | 8.941  | 21.298 | 9.521  | 0.190                                                     | 0.571          | 0.857          | 0.000                 | 0.000                                    | 0.000                      | 0.000                      | 0.00              |
| 02-Mar                       | 15                                           | 6.706  | 15.973 | 7.141  | 0.143                                                     | 0.428          | 0.643          | 0.000                 | 0.000                                    | 0.000                      | 0.000                      | 0.00              |
| 03-Mar                       | 22                                           | 9.835  | 23.428 | 10.473 | 0.209                                                     | 0.628          | 0.943          | 0.000                 | 0.000                                    | 0.000                      | 0.000                      | 0.00              |
| 04-Mar                       | 17                                           | 7.600  | 18.103 | 8.093  | 0.162                                                     | 0.486          | 0.728          | 0.000                 | 0.000                                    | 0.000                      | 0.000                      | 0.00              |
| 05-Mar                       | 11                                           | 4.917  | 11.714 | 5.237  | 0.105                                                     | 0.314          | 0.471          | 0.000                 | 0.000                                    | 0.000                      | 0.000                      | 0.00              |
| 06-Mar                       | 24                                           | 10.729 | 25.557 | 11.425 | 0.229                                                     | 0.686          | 1.028          | 0.005                 | 0.000                                    | 0.000                      | 0.211                      | 0.39              |
| 07-Mar                       | 18                                           | 8.047  | 19.168 | 8.569  | 0.171                                                     | 0.514          | 0.771          | 0.000                 | 0.000                                    | 0.000                      | 0.000                      | 0.00              |
| 08-Mar                       | 14                                           | 6.259  | 14.908 | 6.665  | 0.133                                                     | 0.400          | 0.600          | 0.000                 | 0.000                                    | 0.000                      | 0.000                      | 0.00              |
| 09-Mar                       | 20                                           | 8.941  | 21.298 | 9.521  | 0.190                                                     | 0.571          | 0.857          | 0.000                 | 0.000                                    | 0.000                      | 0.000                      | 0.00              |
| 10-Mar                       | 16                                           | 7.153  | 17.038 | 7.617  | 0.152                                                     | 0.457          | 0.686          | 0.000                 | 0.000                                    | 0.000                      | 0.000                      | 0.00              |
| 11-Mar                       | 17                                           | 7.600  | 18.103 | 8.093  | 0.162                                                     | 0.486          | 0.728          | 0.005                 | 0.000                                    | 0.000                      | 0.000                      | 0.00              |
| 12-Mar                       | 20                                           | 8.941  | 21.298 | 9.521  | 0.190                                                     | 0.571          | 0.857          | 0.000                 | 0.000                                    | 0.000                      | 0.000                      | 0.00              |
| 13-Mar                       | 29                                           | 12.964 | 30.882 | 13.805 | 0.276                                                     | 0.828          | 1.242          | 0.170                 | 0.000                                    | 0.000                      | 0.000                      | 0.00              |
| 14-Mar                       | 18                                           | 8.047  | 19.168 | 8.569  | 0.171                                                     | 0.514          | 0.771          | 0.390                 | 0.000                                    | 0.000                      | 0.000                      | 0.00              |
| 15-Mar                       | 15                                           | 6.706  | 15.973 | 7.141  | 0.143                                                     | 0.428          | 0.643          | 0.000                 | 0.000                                    | 0.000                      | 0.000                      | 0.00              |
| 16-Mar                       | 20                                           | 8.941  | 21.298 | 9.521  | 0.190                                                     | 0.571          | 0.857          | 0.000                 | 0.000                                    | 0.000                      | 0.000                      | 0.00              |
| 17-Mar                       | 18                                           | 8.047  | 19.168 | 8.569  | 0.171                                                     | 0.514          | 0.771          | 0.000                 | 0.000                                    | 0.000                      | 0.000                      | 0.00              |
| 18-Mar                       | 15                                           | 6.706  | 15.973 | 7.141  | 0.143                                                     | 0.428          | 0.643          | 0.005                 | 0.000                                    | 0.000                      | 0.000                      | 0.00              |
| 19-Mar                       | 18                                           | 8.047  | 19.168 | 8.569  | 0.171                                                     | 0.514          | 0.771          | 0.000                 | 0.000                                    | 0.000                      | 0.000                      | 0.00              |
| 20-Mar                       | 13                                           | 5.812  | 13.844 | 6.189  | 0.124                                                     | 0.371          | 0.557          | 0.030                 | 0.000                                    | 0.000                      | 0.000                      | 0.00              |
| 21-Mar                       | 14                                           | 6.259  | 14.908 | 6.665  | 0.133                                                     | 0.400          | 0.600          | 0.470                 | 0.000                                    | 0.000                      | 0.000                      | 0.00              |
| 22-Mar                       | 21                                           | 9.388  | 22.363 | 9.997  | 0.200                                                     | 0.600          | 0.900          | 0.000                 | 0.000                                    | 0.000                      | 0.000                      | 0.00              |
| 23-Mar                       | 17                                           | 7.600  | 18.103 | 8.093  | 0.162                                                     | 0.486          | 0.728          | 0.000                 | 0.000                                    | 0.000                      | 0.000                      | 0.00              |
| 24-Mar                       | 25                                           | 11.176 | 26.622 | 11.901 | 0.238                                                     | 0.714          | 1.071          | 0.005                 | 0.000                                    | 0.000                      | 1.429                      | 2.68              |
| 25-Mar                       | 24                                           | 10.729 | 25.557 | 11.425 | 0.229                                                     | 0.686          | 1.028          | 0.490                 | 0.000                                    | 0.000                      | 0.000                      | 0.00              |
| 26-Mar                       | 17                                           | 7.600  | 18.103 | 8.093  | 0.162                                                     | 0.486          | 0.728          | 0.020                 | 0.000                                    | 0.000                      | 0.000                      | 0.00              |
| 27-Mar                       | 13                                           | 5.812  | 13.844 | 6.189  | 0.124                                                     | 0.371          | 0.557          | 0.000                 | 0.000                                    | 0.000                      | 0.000                      | 0.00              |
| 28-Mar                       | 17                                           | 7.600  | 18.103 | 8.093  | 0.162                                                     | 0.486          | 0.728          | 0.000                 | 0.000                                    | 0.000                      | 0.000                      | 0.00              |
| 29-Mar                       | 22                                           | 9.835  | 23.428 | 10.473 | 0.209                                                     | 0.628          | 0.943          | 0.005                 | 0.000                                    | 0.000                      | 0.000                      | 0.00              |
| 30-Mar                       | 30                                           | 13.411 | 31.947 | 14.281 | 0.286                                                     | 0.857          | 1.285          | 0.270                 | 0.000                                    | 0.000                      | 0.000                      | 0.00              |
| 31-Mar                       | 25                                           | 11.176 | 26.622 | 11.901 | 0.238                                                     | 0.714          | 1.071          | 0.005                 | 0.000                                    | 0.000                      | 1.429                      | 2.68              |
| 01-Apr                       | 15                                           | 6.706  | 15.973 | 7.141  | 0.143                                                     | 0.428          | 0.643          | 0.000                 | 0.000                                    | 0.000                      | 0.000                      | 0.00              |
| 02-Apr                       | 21                                           | 9.388  | 22.363 | 9.997  | 0.200                                                     | 0.600          | 0.900          | 0.000                 | 0.000                                    | 0.000                      | 0.000                      | 0.00              |
| 03-Apr                       | 16                                           | 7.153  | 17.038 | 7.617  | 0.152                                                     | 0.457          | 0.686          | 0.000                 | 0.000                                    | 0.000                      | 0.000                      | 0.00              |
| 04-Apr                       | 16                                           | 7.153  | 17.038 | 7.617  | 0.152                                                     | 0.457          | 0.686          | 0.000                 | 0.000                                    | 0.000                      | 0.000                      | 0.00              |
| 05-Apr                       | 21                                           | 9.388  | 22.363 | 9.997  | 0.200                                                     | 0.600          | 0.900          | 0.000                 | 0.000                                    | 0.000                      | 0.000                      | 0.00              |
| 06-Apr                       | 17                                           | 7.600  | 18.103 | 8.093  | 0.162                                                     | 0.486          | 0.728          | 0.005                 | 0.000                                    | 0.000                      | 0.000                      | 0.00              |
| 07-Apr                       | 18                                           | 8.047  | 19.168 | 8.569  | 0.171                                                     | 0.514          | 0.771          | 0.000                 | 0.000                                    | 0.000                      | 0.000                      | 0.00              |
| 08-Apr                       | 21                                           | 9.388  | 22.363 | 9.997  | 0.200                                                     | 0.600          | 0.900          | 0.000                 | 0.000                                    | 0.000                      | 0.000                      | 0.00              |
| 09-Apr                       | 15                                           | 6.706  | 15.973 | 7.141  | 0.143                                                     | 0.428          | 0.643          | 0.000                 | 0.000                                    | 0.000                      | 0.000                      | 0.00              |
| 10-Apr                       | 21                                           | 9.388  | 22.363 | 9.997  | 0.200                                                     | 0.600          | 0.900          | 0.000                 | 0.000                                    | 0.000                      | 0.000                      | 0.00              |
| 11-Apr                       | 21                                           | 9.388  | 22.363 | 9.997  | 0.200                                                     | 0.600          | 0.900          | 0.005                 | 0.000                                    | 0.000                      | 0.000                      | 0.00              |
| 12-Apr                       | 22                                           | 9.835  | 23.428 | 10.473 | 0.209                                                     | 0.628          | 0.943          | 0.050                 | 0.000                                    | 0.000                      | 0.000                      | 0.00              |
| 13-Apr                       | 16                                           | 7.153  | 17.038 | 7.617  | 0.152                                                     | 0.457          | 0.686          | 0.000                 | 0.000                                    | 0.000                      | 0.000                      | 0.00              |
| 14-Apr                       | 14                                           | 6.259  | 14.908 | 6.665  | 0.133                                                     | 0.400          | 0.600          | 0.550                 | 0.000                                    | 0.000                      | 0.000                      | 0.00              |
| 15-Apr                       | 20                                           | 8.941  | 21.298 | 9.521  | 0.190                                                     | 0.571          | 0.857          | 0.160                 | 0.000                                    | 0.000                      | 0.000                      | 0.00              |
| 16-Apr                       | 16                                           | 7.153  | 17.038 | 7.617  | 0.152                                                     | 0.457          | 0.686          | 0.000                 | 0.000                                    | 0.000                      | 0.000                      | 0.00              |
| 17-Apr                       | 24                                           | 10.729 | 25.557 | 11.425 | 0.229                                                     | 0.686          | 1.028          | 0.000                 | 0.000                                    | 0.000                      | 0.211                      | 0.39              |
| 18-Apr                       | 20                                           | 8.941  | 21.298 | 9.521  | 0.190                                                     | 0.571          | 0.857          | 0.000                 | 0.000                                    | 0.000                      | 0.000                      | 0.00              |
| 19-Apr                       | 20                                           | 8.941  | 21.298 | 9.521  | 0.190                                                     | 0.571          | 0.857          | 0.000                 | 0.000                                    | 0.000                      | 0.000                      | 0.00              |
| 20-Apr                       | 18                                           | 8.047  | 19.168 | 8.569  | 0.171                                                     | 0.514          | 0.771          | 0.000                 | 0.000                                    | 0.000                      | 0.000                      | 0.00              |

**FOSTER WHEELER ENVIRONMENTAL CORPORATION**  
**CALCULATION SHEET - EXCEL 5.0**

**By:** E. Deken, PE  
**Date:** 10/23/98  
**Ch'd By:** Darrel J. Graziani, P.E.  
**Date:** 11/07/98

**Cal. No.:** 981023ED01  
**Rev. No.:** SJRPP 1  
**OFS:** 7830.0020.0054

**Project:** JEA St. Johns Power Park

**Subject:** Fugitive Emission Estimates - Wind Erosion Gypsum Storage Pile, Non-Commercial Materials

**Assumptions:**

1. The threshold friction velocity was selected based on data available in AP-42, Section 13.2.5.
2. Roughness height was estimated based on largest values listed in AP-42, Section 13.2.5
3. Pile is always at maximum capacity which is maximizing emissions.

**References:**

1. AP-42, Section 13.2.5, Industrial Wind Erosion
2. 1997 Local Climatological Data, NOAA, National Climatic Data Center

**Erosion Potential Calculations**

Threshold Friction Velocity:

**1.02**

Roughness Height (m)

**0.003**

| Number<br>of<br>Disturbances | Fastest Mile Values<br>Anemometer Height (m) |        |        |        | Equivalent Friction Velocities<br>$u^*=0.1u^*$<br>(m/s) |                     |                     | Rain Fall<br>(Inches) | Erosion Potential<br>(g/m^2)    |                                 |                                 | Emissions<br>(lb) |
|------------------------------|----------------------------------------------|--------|--------|--------|---------------------------------------------------------|---------------------|---------------------|-----------------------|---------------------------------|---------------------------------|---------------------------------|-------------------|
|                              | 6.1                                          |        | 10     |        | $u_a/u_t \cdot 0.2$                                     | $u_a/u_t \cdot 0.6$ | $u_a/u_t \cdot 0.9$ |                       | 36% Pile<br>$u_a/u_t \cdot 0.2$ | 50% Pile<br>$u_a/u_t \cdot 0.6$ | 14% Pile<br>$u_a/u_t \cdot 0.9$ |                   |
|                              | (mph)                                        | (m/s)  | (mph)  | (m/s)  |                                                         |                     |                     |                       |                                 |                                 |                                 |                   |
| 21-Apr                       | 20                                           | 8.941  | 21.298 | 9.521  | 0.190                                                   | 0.571               | 0.857               | 0.000                 | 0.000                           | 0.000                           | 0.000                           | 0.00              |
| 22-Apr                       | 23                                           | 10.282 | 24.492 | 10.949 | 0.219                                                   | 0.657               | 0.985               | 0.010                 | 0.000                           | 0.000                           | 0.000                           | 0.00              |
| 23-Apr                       | 43                                           | 19.223 | 45.790 | 20.470 | 0.409                                                   | 1.228               | 1.842               | 1.150                 | 0.000                           | 0.000                           | 0.000                           | 0.00              |
| 24-Apr                       | 17                                           | 7.600  | 18.103 | 8.093  | 0.162                                                   | 0.486               | 0.728               | 0.000                 | 0.000                           | 0.000                           | 0.000                           | 0.00              |
| 25-Apr                       | 16                                           | 7.153  | 17.038 | 7.617  | 0.152                                                   | 0.457               | 0.686               | 0.000                 | 0.000                           | 0.000                           | 0.000                           | 0.00              |
| 26-Apr                       | 21                                           | 9.388  | 22.363 | 9.997  | 0.200                                                   | 0.600               | 0.900               | 0.049                 | 0.000                           | 0.000                           | 0.000                           | 0.00              |
| 27-Apr                       | 21                                           | 9.388  | 22.363 | 9.997  | 0.200                                                   | 0.600               | 0.900               | 1.810                 | 0.000                           | 0.000                           | 0.000                           | 0.00              |
| 28-Apr                       | 32                                           | 14.305 | 34.076 | 15.234 | 0.305                                                   | 0.914               | 1.371               | 0.340                 | 0.000                           | 0.000                           | 0.000                           | 0.00              |
| 29-Apr                       | 22                                           | 9.835  | 23.428 | 10.473 | 0.209                                                   | 0.628               | 0.943               | 0.000                 | 0.000                           | 0.000                           | 0.000                           | 0.00              |
| 30-Apr                       | 14                                           | 6.259  | 14.908 | 6.665  | 0.133                                                   | 0.400               | 0.600               | 0.000                 | 0.000                           | 0.000                           | 0.000                           | 0.00              |
| 01-May                       | 18                                           | 8.047  | 19.168 | 8.569  | 0.171                                                   | 0.514               | 0.771               | 0.000                 | 0.000                           | 0.000                           | 0.000                           | 0.00              |
| 02-May                       | 15                                           | 6.706  | 15.973 | 7.141  | 0.143                                                   | 0.428               | 0.643               | 0.000                 | 0.000                           | 0.000                           | 0.000                           | 0.00              |
| 03-May                       | 31                                           | 13.858 | 33.012 | 14.758 | 0.295                                                   | 0.885               | 1.328               | 0.020                 | 0.000                           | 0.000                           | 0.000                           | 0.00              |
| 04-May                       | 16                                           | 7.153  | 17.038 | 7.617  | 0.152                                                   | 0.457               | 0.686               | 0.000                 | 0.000                           | 0.000                           | 0.000                           | 0.00              |
| 05-May                       | 16                                           | 7.153  | 17.038 | 7.617  | 0.152                                                   | 0.457               | 0.686               | 0.000                 | 0.000                           | 0.000                           | 0.000                           | 0.00              |
| 06-May                       | 15                                           | 6.706  | 15.973 | 7.141  | 0.143                                                   | 0.428               | 0.643               | 0.000                 | 0.000                           | 0.000                           | 0.000                           | 0.00              |
| 07-May                       | 18                                           | 8.047  | 19.168 | 8.569  | 0.171                                                   | 0.514               | 0.771               | 0.000                 | 0.000                           | 0.000                           | 0.000                           | 0.00              |
| 08-May                       | 14                                           | 6.259  | 14.908 | 6.665  | 0.133                                                   | 0.400               | 0.600               | 0.000                 | 0.000                           | 0.000                           | 0.000                           | 0.00              |
| 09-May                       | 26                                           | 11.623 | 27.687 | 12.377 | 0.248                                                   | 0.743               | 1.114               | 0.000                 | 0.000                           | 0.000                           | 2.861                           | 5.36              |
| 10-May                       | 16                                           | 7.153  | 17.038 | 7.617  | 0.152                                                   | 0.457               | 0.686               | 0.000                 | 0.000                           | 0.000                           | 0.000                           | 0.00              |
| 11-May                       | 17                                           | 7.600  | 18.103 | 8.093  | 0.162                                                   | 0.486               | 0.728               | 0.000                 | 0.000                           | 0.000                           | 0.000                           | 0.00              |
| 12-May                       | 14                                           | 6.259  | 14.908 | 6.665  | 0.133                                                   | 0.400               | 0.600               | 0.780                 | 0.000                           | 0.000                           | 0.000                           | 0.00              |
| 13-May                       | 17                                           | 7.600  | 18.103 | 8.093  | 0.162                                                   | 0.486               | 0.728               | 0.000                 | 0.000                           | 0.000                           | 0.000                           | 0.00              |
| 14-May                       | 14                                           | 6.259  | 14.908 | 6.665  | 0.133                                                   | 0.400               | 0.600               | 0.000                 | 0.000                           | 0.000                           | 0.000                           | 0.00              |
| 15-May                       | 18                                           | 8.047  | 19.168 | 8.569  | 0.171                                                   | 0.514               | 0.771               | 0.005                 | 0.000                           | 0.000                           | 0.000                           | 0.00              |
| 16-May                       | 15                                           | 6.706  | 15.973 | 7.141  | 0.143                                                   | 0.428               | 0.643               | 0.000                 | 0.000                           | 0.000                           | 0.000                           | 0.00              |
| 17-May                       | 13                                           | 5.812  | 13.844 | 6.189  | 0.124                                                   | 0.371               | 0.557               | 0.000                 | 0.000                           | 0.000                           | 0.000                           | 0.00              |
| 18-May                       | 16                                           | 7.153  | 17.038 | 7.617  | 0.152                                                   | 0.457               | 0.686               | 0.000                 | 0.000                           | 0.000                           | 0.000                           | 0.00              |
| 19-May                       | 16                                           | 7.153  | 17.038 | 7.617  | 0.152                                                   | 0.457               | 0.686               | 0.005                 | 0.000                           | 0.000                           | 0.000                           | 0.00              |
| 20-May                       | 16                                           | 7.153  | 17.038 | 7.617  | 0.152                                                   | 0.457               | 0.686               | 0.005                 | 0.000                           | 0.000                           | 0.000                           | 0.00              |
| 21-May                       | 15                                           | 6.706  | 15.973 | 7.141  | 0.143                                                   | 0.428               | 0.643               | 0.000                 | 0.000                           | 0.000                           | 0.000                           | 0.00              |
| 22-May                       | 20                                           | 8.941  | 21.298 | 9.521  | 0.190                                                   | 0.571               | 0.857               | 0.000                 | 0.000                           | 0.000                           | 0.000                           | 0.00              |
| 23-May                       | 20                                           | 8.941  | 21.298 | 9.521  | 0.190                                                   | 0.571               | 0.857               | 0.000                 | 0.000                           | 0.000                           | 0.000                           | 0.00              |
| 24-May                       | 18                                           | 8.047  | 19.168 | 8.569  | 0.171                                                   | 0.514               | 0.771               | 0.300                 | 0.000                           | 0.000                           | 0.000                           | 0.00              |
| 25-May                       | 22                                           | 9.835  | 23.428 | 10.473 | 0.209                                                   | 0.628               | 0.943               | 0.550                 | 0.000                           | 0.000                           | 0.000                           | 0.00              |
| 26-May                       | 17                                           | 7.600  | 18.103 | 8.093  | 0.162                                                   | 0.486               | 0.728               | 0.005                 | 0.000                           | 0.000                           | 0.000                           | 0.00              |
| 27-May                       | 26                                           | 11.623 | 27.687 | 12.377 | 0.248                                                   | 0.743               | 1.114               | 1.270                 | 0.000                           | 0.000                           | 0.000                           | 0.00              |
| 28-May                       | 22                                           | 9.835  | 23.428 | 10.473 | 0.209                                                   | 0.628               | 0.943               | 0.050                 | 0.000                           | 0.000                           | 0.000                           | 0.00              |
| 29-May                       | 21                                           | 9.388  | 22.363 | 9.997  | 0.200                                                   | 0.600               | 0.900               | 0.010                 | 0.000                           | 0.000                           | 0.000                           | 0.00              |
| 30-May                       | 17                                           | 7.600  | 18.103 | 8.093  | 0.162                                                   | 0.486               | 0.728               | 0.000                 | 0.000                           | 0.000                           | 0.000                           | 0.00              |
| 31-May                       | 21                                           | 9.388  | 22.363 | 9.997  | 0.200                                                   | 0.600               | 0.900               | 0.450                 | 0.000                           | 0.000                           | 0.000                           | 0.00              |
| 01-Jun                       | 18                                           | 8.047  | 19.168 | 8.569  | 0.171                                                   | 0.514               | 0.771               | 0.830                 | 0.000                           | 0.000                           | 0.000                           | 0.00              |
| 02-Jun                       | 14                                           | 6.259  | 14.908 | 6.665  | 0.133                                                   | 0.400               | 0.600               | 0.030                 | 0.000                           | 0.000                           | 0.000                           | 0.00              |
| 03-Jun                       | 14                                           | 6.259  | 14.908 | 6.665  | 0.133                                                   | 0.400               | 0.600               | 0.000                 | 0.000                           | 0.000                           | 0.000                           | 0.00              |
| 04-Jun                       | 21                                           | 9.388  | 22.363 | 9.997  | 0.200                                                   | 0.600               | 0.900               | 0.000                 | 0.000                           | 0.000                           | 0.000                           | 0.00              |
| 05-Jun                       | 22                                           | 9.835  | 23.428 | 10.473 | 0.209                                                   | 0.628               | 0.943               | 0.850                 | 0.000                           | 0.000                           | 0.000                           | 0.00              |
| 06-Jun                       | 22                                           | 9.835  | 23.428 | 10.473 | 0.209                                                   | 0.628               | 0.943               | 0.060                 | 0.000                           | 0.000                           | 0.000                           | 0.00              |
| 07-Jun                       | 14                                           | 6.259  | 14.908 | 6.665  | 0.133                                                   | 0.400               | 0.600               | 0.005                 | 0.000                           | 0.000                           | 0.000                           | 0.00              |
| 08-Jun                       | 17                                           | 7.600  | 18.103 | 8.093  | 0.162                                                   | 0.486               | 0.728               | 0.000                 | 0.000                           | 0.000                           | 0.000                           | 0.00              |
| 09-Jun                       | 22                                           | 9.835  | 23.428 | 10.473 | 0.209                                                   | 0.628               | 0.943               | 0.010                 | 0.000                           | 0.000                           | 0.000                           | 0.00              |
| 10-Jun                       | 20                                           | 8.941  | 21.298 | 9.521  | 0.190                                                   | 0.571               | 0.857               | 0.000                 | 0.000                           | 0.000                           | 0.000                           | 0.00              |
| 11-Jun                       | 17                                           | 7.600  | 18.103 | 8.093  | 0.162                                                   | 0.486               | 0.728               | 0.005                 | 0.000                           | 0.000                           | 0.000                           | 0.00              |
| 12-Jun                       | 16                                           | 7.153  | 17.038 | 7.617  | 0.152                                                   | 0.457               | 0.686               | 0.320                 | 0.000                           | 0.000                           | 0.000                           | 0.00              |
| 13-Jun                       | 22                                           | 9.835  | 23.428 | 10.473 | 0.209                                                   | 0.628               | 0.943               | 0.005                 | 0.000                           | 0.000                           | 0.000                           | 0.00              |
| 14-Jun                       | 22                                           | 9.835  | 23.428 | 10.473 | 0.209                                                   | 0.628               | 0.943               | 0.230                 | 0.000                           | 0.000                           | 0.000                           | 0.00              |

**FOSTER WHEELER ENVIRONMENTAL CORPORATION**  
**CALCULATION SHEET - EXCEL 5.0**

**By:** E. Deken, PE  
**Date:** 10/23/98  
**Cl'd By:** Darrel J. Graziant, P.E.  
**Date:** 11/07/98

**Cal. No.:** 981023ED01  
**Rev. No.:** SJRPP 1  
**OFS:** 7830.0020.0054

**Project:** JEA St. Johns Power Park

**Subject:** Fugitive Emission Estimates - Wind Erosion Gypsum Storage Pile, Non-Commercial Materials

**Assumptions:**

1. The threshold friction velocity was selected based on data available in AP-42; Section 13.2.5.
2. Roughness height was estimated based on largest values listed in AP-42, Section 13.2.5
3. Pile is always at maximum capacity which is maximizing emissions.

**References:**

1. AP-42, Section 13.2.5, Industrial Wind Erosion
2. 1997 Local Climatological Data, NOAA, National Climatic Data Center

**Erosion Potential Calculations**

Threshold Friction Velocity: **1.02**  
 Roughness Height (m): **0.003**

| Number of Disturbances | Fastest Mile Values   |        |          |        | Equivalent Friction Velocities |                |                | Rain Fall (inches) | Erosion Potential       |                         |                         | Emissions (lb) |
|------------------------|-----------------------|--------|----------|--------|--------------------------------|----------------|----------------|--------------------|-------------------------|-------------------------|-------------------------|----------------|
|                        | Anemometer Height (m) |        |          |        | $u^* = 0.1 u^*$                |                |                |                    | (g/m^2)                 |                         |                         |                |
|                        | 6.1 (mph)             | (m/s)  | 10 (mph) | (m/s)  | $u_e/u_{*0.2}$                 | $u_e/u_{*0.6}$ | $u_e/u_{*0.9}$ |                    | 36% Pile $u_e/u_{*0.2}$ | 50% Pile $u_e/u_{*0.6}$ | 14% Pile $u_e/u_{*0.9}$ |                |
| 15-Jun                 | 23                    | 10.282 | 24.492   | 10.949 | 0.219                          | 0.657          | 0.985          | 0.080              | 0.000                   | 0.000                   | 0.000                   | 0.00           |
| 16-Jun                 | 14                    | 6.259  | 14.908   | 6.665  | 0.133                          | 0.400          | 0.600          | 0.000              | 0.000                   | 0.000                   | 0.000                   | 0.00           |
| 17-Jun                 | 29                    | 12.964 | 30.882   | 13.805 | 0.276                          | 0.828          | 1.242          | 0.520              | 0.000                   | 0.000                   | 0.000                   | 0.00           |
| 18-Jun                 | 26                    | 11.623 | 27.687   | 12.377 | 0.248                          | 0.743          | 1.114          | 0.080              | 0.000                   | 0.000                   | 0.000                   | 0.00           |
| 19-Jun                 | 31                    | 13.858 | 33.012   | 14.758 | 0.295                          | 0.885          | 1.328          | 0.520              | 0.000                   | 0.000                   | 0.000                   | 0.00           |
| 20-Jun                 | 25                    | 11.176 | 26.622   | 11.901 | 0.238                          | 0.714          | 1.071          | 0.005              | 0.000                   | 0.000                   | 1.429                   | 2.68           |
| 21-Jun                 | 17                    | 7.600  | 18.103   | 8.093  | 0.162                          | 0.486          | 0.728          | 0.000              | 0.000                   | 0.000                   | 0.000                   | 0.00           |
| 22-Jun                 | 16                    | 7.153  | 17.038   | 7.617  | 0.152                          | 0.457          | 0.686          | 0.000              | 0.000                   | 0.000                   | 0.000                   | 0.00           |
| 23-Jun                 | 14                    | 6.259  | 14.908   | 6.665  | 0.133                          | 0.400          | 0.600          | 0.000              | 0.000                   | 0.000                   | 0.000                   | 0.00           |
| 24-Jun                 | 17                    | 7.600  | 18.103   | 8.093  | 0.162                          | 0.486          | 0.728          | 0.000              | 0.000                   | 0.000                   | 0.000                   | 0.00           |
| 25-Jun                 | 17                    | 7.600  | 18.103   | 8.093  | 0.162                          | 0.486          | 0.728          | 0.030              | 0.000                   | 0.000                   | 0.000                   | 0.00           |
| 26-Jun                 | 24                    | 10.729 | 25.557   | 11.425 | 0.229                          | 0.686          | 1.028          | 0.780              | 0.000                   | 0.000                   | 0.000                   | 0.00           |
| 27-Jun                 | 33                    | 14.752 | 35.141   | 15.710 | 0.314                          | 0.943          | 1.414          | 1.270              | 0.000                   | 0.000                   | 0.000                   | 0.00           |
| 28-Jun                 | 23                    | 10.282 | 24.492   | 10.949 | 0.219                          | 0.657          | 0.985          | 0.010              | 0.000                   | 0.000                   | 0.000                   | 0.00           |
| 29-Jun                 | 15                    | 6.706  | 15.973   | 7.141  | 0.143                          | 0.428          | 0.643          | 0.020              | 0.000                   | 0.000                   | 0.000                   | 0.00           |
| 30-Jun                 | 20                    | 8.941  | 21.298   | 9.521  | 0.190                          | 0.571          | 0.857          | 3.690              | 0.000                   | 0.000                   | 0.000                   | 0.00           |
| 01-Jul                 | 22                    | 9.835  | 23.428   | 10.473 | 0.209                          | 0.628          | 0.943          | 0.040              | 0.000                   | 0.000                   | 0.000                   | 0.00           |
| 02-Jul                 | 14                    | 6.259  | 14.908   | 6.665  | 0.133                          | 0.400          | 0.600          | 0.000              | 0.000                   | 0.000                   | 0.000                   | 0.00           |
| 03-Jul                 | 13                    | 5.812  | 13.844   | 6.189  | 0.124                          | 0.371          | 0.557          | 0.000              | 0.000                   | 0.000                   | 0.000                   | 0.00           |
| 04-Jul                 | 22                    | 9.835  | 23.428   | 10.473 | 0.209                          | 0.628          | 0.943          | 0.150              | 0.000                   | 0.000                   | 0.000                   | 0.00           |
| 05-Jul                 | 38                    | 16.988 | 40.466   | 18.090 | 0.362                          | 1.085          | 1.628          | 0.610              | 0.000                   | 0.000                   | 0.000                   | 0.00           |
| 06-Jul                 | 29                    | 12.964 | 30.882   | 13.805 | 0.276                          | 0.828          | 1.242          | 1.970              | 0.000                   | 0.000                   | 0.000                   | 0.00           |
| 07-Jul                 | 21                    | 9.388  | 22.363   | 9.997  | 0.200                          | 0.600          | 0.900          | 0.700              | 0.000                   | 0.000                   | 0.000                   | 0.00           |
| 08-Jul                 | 16                    | 7.153  | 17.038   | 7.617  | 0.152                          | 0.457          | 0.686          | 0.005              | 0.000                   | 0.000                   | 0.000                   | 0.00           |
| 09-Jul                 | 16                    | 7.153  | 17.038   | 7.617  | 0.152                          | 0.457          | 0.686          | 0.040              | 0.000                   | 0.000                   | 0.000                   | 0.00           |
| 10-Jul                 | 16                    | 7.153  | 17.038   | 7.617  | 0.152                          | 0.457          | 0.686          | 0.000              | 0.000                   | 0.000                   | 0.000                   | 0.00           |
| 11-Jul                 | 20                    | 8.941  | 21.298   | 9.521  | 0.190                          | 0.571          | 0.857          | 0.900              | 0.000                   | 0.000                   | 0.000                   | 0.00           |
| 12-Jul                 | 16                    | 7.153  | 17.038   | 7.617  | 0.152                          | 0.457          | 0.686          | 0.450              | 0.000                   | 0.000                   | 0.000                   | 0.00           |
| 13-Jul                 | 14                    | 6.259  | 14.908   | 6.665  | 0.133                          | 0.400          | 0.600          | 0.000              | 0.000                   | 0.000                   | 0.000                   | 0.00           |
| 14-Jul                 | 14                    | 6.259  | 14.908   | 6.665  | 0.133                          | 0.400          | 0.600          | 0.000              | 0.000                   | 0.000                   | 0.000                   | 0.00           |
| 15-Jul                 | 15                    | 6.706  | 15.973   | 7.141  | 0.143                          | 0.428          | 0.643          | 0.000              | 0.000                   | 0.000                   | 0.000                   | 0.00           |
| 16-Jul                 | 24                    | 10.729 | 25.557   | 11.425 | 0.229                          | 0.686          | 1.028          | 0.005              | 0.000                   | 0.000                   | 0.211                   | 0.39           |
| 17-Jul                 | 20                    | 8.941  | 21.298   | 9.521  | 0.190                          | 0.571          | 0.857          | 0.020              | 0.000                   | 0.000                   | 0.000                   | 0.00           |
| 18-Jul                 | 28                    | 12.517 | 29.817   | 13.329 | 0.267                          | 0.800          | 1.200          | 0.005              | 0.000                   | 0.000                   | 6.363                   | 11.91          |
| 19-Jul                 | 22                    | 9.835  | 23.428   | 10.473 | 0.209                          | 0.628          | 0.943          | 0.005              | 0.000                   | 0.000                   | 0.000                   | 0.00           |
| 20-Jul                 | 23                    | 10.282 | 24.492   | 10.949 | 0.219                          | 0.657          | 0.985          | 0.010              | 0.000                   | 0.000                   | 0.000                   | 0.00           |
| 21-Jul                 | 16                    | 7.153  | 17.038   | 7.617  | 0.152                          | 0.457          | 0.686          | 0.260              | 0.000                   | 0.000                   | 0.000                   | 0.00           |
| 22-Jul                 | 17                    | 7.600  | 18.103   | 8.093  | 0.162                          | 0.486          | 0.728          | 0.000              | 0.000                   | 0.000                   | 0.000                   | 0.00           |
| 23-Jul                 | 22                    | 9.835  | 23.428   | 10.473 | 0.209                          | 0.628          | 0.943          | 0.010              | 0.000                   | 0.000                   | 0.000                   | 0.00           |
| 24-Jul                 | 14                    | 6.259  | 14.908   | 6.665  | 0.133                          | 0.400          | 0.600          | 0.140              | 0.000                   | 0.000                   | 0.000                   | 0.00           |
| 25-Jul                 | 24                    | 10.729 | 25.557   | 11.425 | 0.229                          | 0.686          | 1.028          | 1.060              | 0.000                   | 0.000                   | 0.000                   | 0.00           |
| 26-Jul                 | 23                    | 10.282 | 24.492   | 10.949 | 0.219                          | 0.657          | 0.985          | 0.010              | 0.000                   | 0.000                   | 0.000                   | 0.00           |
| 27-Jul                 | 18                    | 8.047  | 19.168   | 8.569  | 0.171                          | 0.514          | 0.771          | 0.160              | 0.000                   | 0.000                   | 0.000                   | 0.00           |
| 28-Jul                 | 16                    | 7.153  | 17.038   | 7.617  | 0.152                          | 0.457          | 0.686          | 0.000              | 0.000                   | 0.000                   | 0.000                   | 0.00           |
| 29-Jul                 | 18                    | 8.047  | 19.168   | 8.569  | 0.171                          | 0.514          | 0.771          | 0.000              | 0.000                   | 0.000                   | 0.000                   | 0.00           |
| 30-Jul                 | 16                    | 7.153  | 17.038   | 7.617  | 0.152                          | 0.457          | 0.686          | 0.160              | 0.000                   | 0.000                   | 0.000                   | 0.00           |
| 31-Jul                 | 16                    | 7.153  | 17.038   | 7.617  | 0.152                          | 0.457          | 0.686          | 1.000              | 0.000                   | 0.000                   | 0.000                   | 0.00           |
| 01-Aug                 | 21                    | 9.388  | 22.363   | 9.997  | 0.200                          | 0.600          | 0.900          | 3.730              | 0.000                   | 0.000                   | 0.000                   | 0.00           |
| 02-Aug                 | 20                    | 8.941  | 21.298   | 9.521  | 0.190                          | 0.571          | 0.857          | 0.500              | 0.000                   | 0.000                   | 0.000                   | 0.00           |
| 03-Aug                 | 24                    | 10.729 | 25.557   | 11.425 | 0.229                          | 0.686          | 1.028          | 0.160              | 0.000                   | 0.000                   | 0.000                   | 0.00           |
| 04-Aug                 | 16                    | 7.153  | 17.038   | 7.617  | 0.152                          | 0.457          | 0.686          | 0.000              | 0.000                   | 0.000                   | 0.000                   | 0.00           |
| 05-Aug                 | 13                    | 5.812  | 13.844   | 6.189  | 0.124                          | 0.371          | 0.557          | 0.000              | 0.000                   | 0.000                   | 0.000                   | 0.00           |
| 06-Aug                 | 21                    | 9.388  | 22.363   | 9.997  | 0.200                          | 0.600          | 0.900          | 0.010              | 0.000                   | 0.000                   | 0.000                   | 0.00           |
| 07-Aug                 | 18                    | 8.047  | 19.168   | 8.569  | 0.171                          | 0.514          | 0.771          | 0.010              | 0.000                   | 0.000                   | 0.000                   | 0.00           |
| 08-Aug                 | 20                    | 8.941  | 21.298   | 9.521  | 0.190                          | 0.571          | 0.857          | 0.060              | 0.000                   | 0.000                   | 0.000                   | 0.00           |

**FOSTER WHEELER ENVIRONMENTAL CORPORATION**  
**CALCULATION SHEET - EXCEL 5.0**

**By:** E. Deken, PE  
**Date:** 10/23/98  
**Ch'd By:** Darrel J. Graziani, P.E.  
**Date:** 11/07/98

**Cal. No.:** 981023ED01  
**Rev. No.:** SJRPP 1  
**OFS:** 7830.0020.0054

**Project:** JEA St. Johns Power Park

**Subject:** Fugitive Emission Estimates - Wind Erosion Gypsum Storage Pile, Non-Commercial Materials

**Assumptions:**

1. The threshold friction velocity was selected based on data available in AP-42, Section 13.2.5.
2. Roughness height was estimated based on largest values listed in AP-42, Section 13.2.5
3. Pile is always at maximum capacity which is maximizing emissions.

**References:**

1. AP-42, Section 13.2.5, Industrial Wind Erosion
2. 1997 Local Climatological Data, NOAA, National Climatic Data Center

**Erosion Potential Calculations**

Threshold Friction Velocity: **1.02**  
 Roughness Height (m) **0.003**

| Number<br>of<br>Disturbances | Fastest Mile Values<br>Anemometer Height (m) |        |        |        | Equivalent Friction Velocities<br>$u^*=0.1u^*$ |                |                | Rain Fall<br>(inches) | Erosion Potential<br>(g/m <sup>2</sup> ) |                |                | Emissions<br>(lb) |
|------------------------------|----------------------------------------------|--------|--------|--------|------------------------------------------------|----------------|----------------|-----------------------|------------------------------------------|----------------|----------------|-------------------|
|                              | 6.1                                          |        | 10     |        | (m/s)                                          |                |                |                       | 36% Pile                                 | 50% Pile       | 14% Pile       |                   |
|                              | (mph)                                        | (m/s)  | (mph)  | (m/s)  | $u_e/u_{*0.2}$                                 | $u_e/u_{*0.6}$ | $u_e/u_{*0.9}$ |                       | $u_e/u_{*0.2}$                           | $u_e/u_{*0.6}$ | $u_e/u_{*0.9}$ |                   |
| 09-Aug                       | 17                                           | 7.600  | 18.103 | 8.093  | 0.162                                          | 0.486          | 0.728          | 0.020                 | 0.000                                    | 0.000          | 0.000          | 0.00              |
| 10-Aug                       | 17                                           | 7.600  | 18.103 | 8.093  | 0.162                                          | 0.486          | 0.728          | 0.220                 | 0.000                                    | 0.000          | 0.000          | 0.00              |
| 11-Aug                       | 15                                           | 6.706  | 15.973 | 7.141  | 0.143                                          | 0.428          | 0.643          | 0.005                 | 0.000                                    | 0.000          | 0.000          | 0.00              |
| 12-Aug                       | 15                                           | 6.706  | 15.973 | 7.141  | 0.143                                          | 0.428          | 0.643          | 0.000                 | 0.000                                    | 0.000          | 0.000          | 0.00              |
| 13-Aug                       | 15                                           | 6.706  | 15.973 | 7.141  | 0.143                                          | 0.428          | 0.643          | 0.450                 | 0.000                                    | 0.000          | 0.000          | 0.00              |
| 14-Aug                       | 13                                           | 5.812  | 13.844 | 6.189  | 0.124                                          | 0.371          | 0.557          | 0.010                 | 0.000                                    | 0.000          | 0.000          | 0.00              |
| 15-Aug                       | 23                                           | 10.282 | 24.492 | 10.949 | 0.219                                          | 0.657          | 0.985          | 0.005                 | 0.000                                    | 0.000          | 0.000          | 0.00              |
| 16-Aug                       | 30                                           | 13.411 | 31.947 | 14.281 | 0.286                                          | 0.857          | 1.285          | 0.710                 | 0.000                                    | 0.000          | 0.000          | 0.00              |
| 17-Aug                       | 14                                           | 6.259  | 14.908 | 6.665  | 0.133                                          | 0.400          | 0.600          | 0.000                 | 0.000                                    | 0.000          | 0.000          | 0.00              |
| 18-Aug                       | 26                                           | 11.623 | 27.687 | 12.377 | 0.248                                          | 0.743          | 1.114          | 0.270                 | 0.000                                    | 0.000          | 0.000          | 0.00              |
| 19-Aug                       | 16                                           | 7.153  | 17.038 | 7.617  | 0.152                                          | 0.457          | 0.686          | 0.240                 | 0.000                                    | 0.000          | 0.000          | 0.00              |
| 20-Aug                       | 17                                           | 7.600  | 18.103 | 8.093  | 0.162                                          | 0.486          | 0.728          | 0.000                 | 0.000                                    | 0.000          | 0.000          | 0.00              |
| 21-Aug                       | 21                                           | 9.388  | 22.363 | 9.997  | 0.200                                          | 0.600          | 0.900          | 0.160                 | 0.000                                    | 0.000          | 0.000          | 0.00              |
| 22-Aug                       | 15                                           | 6.706  | 15.973 | 7.141  | 0.143                                          | 0.428          | 0.643          | 0.000                 | 0.000                                    | 0.000          | 0.000          | 0.00              |
| 23-Aug                       | 21                                           | 9.388  | 22.363 | 9.997  | 0.200                                          | 0.600          | 0.900          | 0.020                 | 0.000                                    | 0.000          | 0.000          | 0.00              |
| 24-Aug                       | 29                                           | 12.964 | 30.882 | 13.805 | 0.276                                          | 0.828          | 1.242          | 1.590                 | 0.000                                    | 0.000          | 0.000          | 0.00              |
| 25-Aug                       | 18                                           | 8.047  | 19.168 | 8.569  | 0.171                                          | 0.514          | 0.771          | 0.000                 | 0.000                                    | 0.000          | 0.000          | 0.00              |
| 26-Aug                       | 20                                           | 8.941  | 21.298 | 9.521  | 0.190                                          | 0.571          | 0.857          | 0.000                 | 0.000                                    | 0.000          | 0.000          | 0.00              |
| 27-Aug                       | 11                                           | 4.917  | 11.714 | 5.237  | 0.105                                          | 0.314          | 0.471          | 0.000                 | 0.000                                    | 0.000          | 0.000          | 0.00              |
| 28-Aug                       | 16                                           | 7.153  | 17.038 | 7.617  | 0.152                                          | 0.457          | 0.686          | 0.000                 | 0.000                                    | 0.000          | 0.000          | 0.00              |
| 29-Aug                       | 17                                           | 7.600  | 18.103 | 8.093  | 0.162                                          | 0.486          | 0.728          | 0.000                 | 0.000                                    | 0.000          | 0.000          | 0.00              |
| 30-Aug                       | 21                                           | 9.388  | 22.363 | 9.997  | 0.200                                          | 0.600          | 0.900          | 0.080                 | 0.000                                    | 0.000          | 0.000          | 0.00              |
| 31-Aug                       | 16                                           | 7.153  | 17.038 | 7.617  | 0.152                                          | 0.457          | 0.686          | 0.000                 | 0.000                                    | 0.000          | 0.000          | 0.00              |
| 01-Sep                       | 21                                           | 9.388  | 22.363 | 9.997  | 0.200                                          | 0.600          | 0.900          | 0.005                 | 0.000                                    | 0.000          | 0.000          | 0.00              |
| 02-Sep                       | 16                                           | 7.153  | 17.038 | 7.617  | 0.152                                          | 0.457          | 0.686          | 0.130                 | 0.000                                    | 0.000          | 0.000          | 0.00              |
| 03-Sep                       | 11                                           | 4.917  | 11.714 | 5.237  | 0.105                                          | 0.314          | 0.471          | 0.000                 | 0.000                                    | 0.000          | 0.000          | 0.00              |
| 04-Sep                       | 26                                           | 11.623 | 27.687 | 12.377 | 0.248                                          | 0.743          | 1.114          | 0.005                 | 0.000                                    | 0.000          | 2.861          | 5.36              |
| 05-Sep                       | 21                                           | 9.388  | 22.363 | 9.997  | 0.200                                          | 0.600          | 0.900          | 0.000                 | 0.000                                    | 0.000          | 0.000          | 0.00              |
| 06-Sep                       | 18                                           | 8.047  | 19.168 | 8.569  | 0.171                                          | 0.514          | 0.771          | 0.000                 | 0.000                                    | 0.000          | 0.000          | 0.00              |
| 07-Sep                       | 16                                           | 7.153  | 17.038 | 7.617  | 0.152                                          | 0.457          | 0.686          | 0.000                 | 0.000                                    | 0.000          | 0.000          | 0.00              |
| 08-Sep                       | 14                                           | 6.259  | 14.908 | 6.665  | 0.133                                          | 0.400          | 0.600          | 0.000                 | 0.000                                    | 0.000          | 0.000          | 0.00              |
| 09-Sep                       | 14                                           | 6.259  | 14.908 | 6.665  | 0.133                                          | 0.400          | 0.600          | 0.000                 | 0.000                                    | 0.000          | 0.000          | 0.00              |
| 10-Sep                       | 17                                           | 7.600  | 18.103 | 8.093  | 0.162                                          | 0.486          | 0.728          | 0.005                 | 0.000                                    | 0.000          | 0.000          | 0.00              |
| 11-Sep                       | 15                                           | 6.706  | 15.973 | 7.141  | 0.143                                          | 0.428          | 0.643          | 0.000                 | 0.000                                    | 0.000          | 0.000          | 0.00              |
| 12-Sep                       | 14                                           | 6.259  | 14.908 | 6.665  | 0.133                                          | 0.400          | 0.600          | 0.000                 | 0.000                                    | 0.000          | 0.000          | 0.00              |
| 13-Sep                       | 14                                           | 6.259  | 14.908 | 6.665  | 0.133                                          | 0.400          | 0.600          | 0.000                 | 0.000                                    | 0.000          | 0.000          | 0.00              |
| 14-Sep                       | 20                                           | 8.941  | 21.298 | 9.521  | 0.190                                          | 0.571          | 0.857          | 0.030                 | 0.000                                    | 0.000          | 0.000          | 0.00              |
| 15-Sep                       | 14                                           | 6.259  | 14.908 | 6.665  | 0.133                                          | 0.400          | 0.600          | 0.000                 | 0.000                                    | 0.000          | 0.000          | 0.00              |
| 16-Sep                       | 14                                           | 6.259  | 14.908 | 6.665  | 0.133                                          | 0.400          | 0.600          | 0.000                 | 0.000                                    | 0.000          | 0.000          | 0.00              |
| 17-Sep                       | 16                                           | 7.153  | 17.038 | 7.617  | 0.152                                          | 0.457          | 0.686          | 0.000                 | 0.000                                    | 0.000          | 0.000          | 0.00              |
| 18-Sep                       | 11                                           | 4.917  | 11.714 | 5.237  | 0.105                                          | 0.314          | 0.471          | 0.000                 | 0.000                                    | 0.000          | 0.000          | 0.00              |
| 19-Sep                       | 14                                           | 6.259  | 14.908 | 6.665  | 0.133                                          | 0.400          | 0.600          | 0.000                 | 0.000                                    | 0.000          | 0.000          | 0.00              |
| 20-Sep                       | 11                                           | 4.917  | 11.714 | 5.237  | 0.105                                          | 0.314          | 0.471          | 0.000                 | 0.000                                    | 0.000          | 0.000          | 0.00              |
| 21-Sep                       | 16                                           | 7.153  | 17.038 | 7.617  | 0.152                                          | 0.457          | 0.686          | 0.000                 | 0.000                                    | 0.000          | 0.000          | 0.00              |
| 22-Sep                       | 17                                           | 7.600  | 18.103 | 8.093  | 0.162                                          | 0.486          | 0.728          | 0.000                 | 0.000                                    | 0.000          | 0.000          | 0.00              |
| 23-Sep                       | 20                                           | 8.941  | 21.298 | 9.521  | 0.190                                          | 0.571          | 0.857          | 0.180                 | 0.000                                    | 0.000          | 0.000          | 0.00              |
| 24-Sep                       | 14                                           | 6.259  | 14.908 | 6.665  | 0.133                                          | 0.400          | 0.600          | 1.000                 | 0.000                                    | 0.000          | 0.000          | 0.00              |
| 25-Sep                       | 23                                           | 10.282 | 24.492 | 10.949 | 0.219                                          | 0.657          | 0.985          | 0.280                 | 0.000                                    | 0.000          | 0.000          | 0.00              |
| 26-Sep                       | 16                                           | 7.153  | 17.038 | 7.617  | 0.152                                          | 0.457          | 0.686          | 1.080                 | 0.000                                    | 0.000          | 0.000          | 0.00              |
| 27-Sep                       | 7                                            | 3.129  | 7.454  | 3.332  | 0.067                                          | 0.200          | 0.300          | 2.250                 | 0.000                                    | 0.000          | 0.000          | 0.00              |
| 28-Sep                       | 15                                           | 6.706  | 15.973 | 7.141  | 0.143                                          | 0.428          | 0.643          | 0.010                 | 0.000                                    | 0.000          | 0.000          | 0.00              |
| 29-Sep                       | 16                                           | 7.153  | 17.038 | 7.617  | 0.152                                          | 0.457          | 0.686          | 0.000                 | 0.000                                    | 0.000          | 0.000          | 0.00              |
| 30-Sep                       | 17                                           | 7.600  | 18.103 | 8.093  | 0.162                                          | 0.486          | 0.728          | 0.000                 | 0.000                                    | 0.000          | 0.000          | 0.00              |
| 01-Oct                       | 17                                           | 7.600  | 18.103 | 8.093  | 0.162                                          | 0.486          | 0.728          | 0.000                 | 0.000                                    | 0.000          | 0.000          | 0.00              |
| 02-Oct                       | 23                                           | 10.282 | 24.492 | 10.949 | 0.219                                          | 0.657          | 0.985          | 0.000                 | 0.000                                    | 0.000          | 0.000          | 0.00              |



**FOSTER WHEELER ENVIRONMENTAL CORPORATION**  
**CALCULATION SHEET - EXCEL 5.0**

**By: E. Deken, PE**  
**Date: 10/23/98**  
**Ch'd By: Darrel J. Graziani, P.E.**  
**Date: 11/07/98**

**Cal. No.: 981023ED01**  
**Rev. No.: SJRPP 1**  
**OFS: 7830.0020.0054**

**Project: JEA St. Johns Power Park**

**Subject: Fugitive Emission Estimates - Wind Erosion Gypsum Storage Pile, Non-Commercial Materials**

**Assumptions:**

1. The threshold friction velocity was selected based on data available in AP-42, Section 13.2.5.
2. Roughness height was estimated based on largest values listed in AP-42, Section 13.2.5
3. Pile is always at maximum capacity which is maximizing emissions.

**References:**

1. AP-42, Section 13.2.5, Industrial Wind Erosion
2. 1997 Local Climatological Data, NOAA, National Climatic Data Center

**Erosion Potential Calculations**

Threshold Friction Velocity: **1.02**  
 Roughness Height (m) **0.003**

| Number<br>of<br>Disturbances | Fastest Mile Values<br>Anemometer Height (m) |        |        |        | Equivalent Friction Velocities<br>$u^* = 0.1u^*$ |               |               | Rain Fall<br>(Inches) | Erosion Potential<br>(g/m^2) |                           |                           | Emissions<br>(lb) |
|------------------------------|----------------------------------------------|--------|--------|--------|--------------------------------------------------|---------------|---------------|-----------------------|------------------------------|---------------------------|---------------------------|-------------------|
|                              | 6.1                                          |        | 10     |        | $u^*/u_t:0.2$                                    |               |               |                       | 36% Pile<br>$u_t/u_t:0.2$    | 50% Pile<br>$u_t/u_t:0.6$ | 14% Pile<br>$u_t/u_t:0.9$ |                   |
|                              | (mph)                                        | (m/s)  | (mph)  | (m/s)  | $u_t/u_t:0.2$                                    | $u_t/u_t:0.6$ | $u_t/u_t:0.9$ |                       | $u_t/u_t:0.2$                | $u_t/u_t:0.6$             | $u_t/u_t:0.9$             |                   |
| 03-Oct                       | 17                                           | 7.600  | 18.103 | 8.093  | 0.162                                            | 0.486         | 0.728         | 0.005                 | 0.000                        | 0.000                     | 0.000                     | 0.00              |
| 04-Oct                       | 21                                           | 9.388  | 22.363 | 9.997  | 0.200                                            | 0.600         | 0.900         | 0.005                 | 0.000                        | 0.000                     | 0.000                     | 0.00              |
| 05-Oct                       | 20                                           | 8.941  | 21.298 | 9.521  | 0.190                                            | 0.571         | 0.857         | 0.000                 | 0.000                        | 0.000                     | 0.000                     | 0.00              |
| 06-Oct                       | 15                                           | 6.706  | 15.973 | 7.141  | 0.143                                            | 0.428         | 0.643         | 0.000                 | 0.000                        | 0.000                     | 0.000                     | 0.00              |
| 07-Oct                       | 18                                           | 8.047  | 19.168 | 8.569  | 0.171                                            | 0.514         | 0.771         | 0.000                 | 0.000                        | 0.000                     | 0.000                     | 0.00              |
| 08-Oct                       | 21                                           | 9.388  | 22.363 | 9.997  | 0.200                                            | 0.600         | 0.900         | 0.005                 | 0.000                        | 0.000                     | 0.000                     | 0.00              |
| 09-Oct                       | 23                                           | 10.282 | 24.492 | 10.949 | 0.219                                            | 0.657         | 0.985         | 0.170                 | 0.000                        | 0.000                     | 0.000                     | 0.00              |
| 10-Oct                       | 21                                           | 9.388  | 22.363 | 9.997  | 0.200                                            | 0.600         | 0.900         | 0.000                 | 0.000                        | 0.000                     | 0.000                     | 0.00              |
| 11-Oct                       | 20                                           | 8.941  | 21.298 | 9.521  | 0.190                                            | 0.571         | 0.857         | 0.090                 | 0.000                        | 0.000                     | 0.000                     | 0.00              |
| 12-Oct                       | 20                                           | 8.941  | 21.298 | 9.521  | 0.190                                            | 0.571         | 0.857         | 0.050                 | 0.000                        | 0.000                     | 0.000                     | 0.00              |
| 13-Oct                       | 15                                           | 6.706  | 15.973 | 7.141  | 0.143                                            | 0.428         | 0.643         | 0.005                 | 0.000                        | 0.000                     | 0.000                     | 0.00              |
| 14-Oct                       | 13                                           | 5.812  | 13.844 | 6.189  | 0.124                                            | 0.371         | 0.557         | 0.000                 | 0.000                        | 0.000                     | 0.000                     | 0.00              |
| 15-Oct                       | 15                                           | 6.706  | 15.973 | 7.141  | 0.143                                            | 0.428         | 0.643         | 0.240                 | 0.000                        | 0.000                     | 0.000                     | 0.00              |
| 16-Oct                       | 16                                           | 7.153  | 17.038 | 7.617  | 0.152                                            | 0.457         | 0.686         | 0.050                 | 0.000                        | 0.000                     | 0.000                     | 0.00              |
| 17-Oct                       | 11                                           | 4.917  | 11.714 | 5.237  | 0.105                                            | 0.314         | 0.471         | 0.000                 | 0.000                        | 0.000                     | 0.000                     | 0.00              |
| 18-Oct                       | 14                                           | 6.259  | 14.908 | 6.665  | 0.133                                            | 0.400         | 0.600         | 0.050                 | 0.000                        | 0.000                     | 0.000                     | 0.00              |
| 19-Oct                       | 20                                           | 8.941  | 21.298 | 9.521  | 0.190                                            | 0.571         | 0.857         | 0.000                 | 0.000                        | 0.000                     | 0.000                     | 0.00              |
| 20-Oct                       | 15                                           | 6.706  | 15.973 | 7.141  | 0.143                                            | 0.428         | 0.643         | 0.000                 | 0.000                        | 0.000                     | 0.000                     | 0.00              |
| 21-Oct                       | 10                                           | 4.470  | 10.649 | 4.760  | 0.095                                            | 0.286         | 0.428         | 0.000                 | 0.000                        | 0.000                     | 0.000                     | 0.00              |
| 22-Oct                       | 14                                           | 6.259  | 14.908 | 6.665  | 0.133                                            | 0.400         | 0.600         | 0.000                 | 0.000                        | 0.000                     | 0.000                     | 0.00              |
| 23-Oct                       | 14                                           | 6.259  | 14.908 | 6.665  | 0.133                                            | 0.400         | 0.600         | 0.000                 | 0.000                        | 0.000                     | 0.000                     | 0.00              |
| 24-Oct                       | 20                                           | 8.941  | 21.298 | 9.521  | 0.190                                            | 0.571         | 0.857         | 0.290                 | 0.000                        | 0.000                     | 0.000                     | 0.00              |
| 25-Oct                       | 11                                           | 4.917  | 11.714 | 5.237  | 0.105                                            | 0.314         | 0.471         | 0.000                 | 0.000                        | 0.000                     | 0.000                     | 0.00              |
| 26-Oct                       | 22                                           | 9.835  | 23.428 | 10.473 | 0.209                                            | 0.628         | 0.943         | 0.580                 | 0.000                        | 0.000                     | 0.000                     | 0.00              |
| 27-Oct                       | 22                                           | 9.835  | 23.428 | 10.473 | 0.209                                            | 0.628         | 0.943         | 2.640                 | 0.000                        | 0.000                     | 0.000                     | 0.00              |
| 28-Oct                       | 14                                           | 6.259  | 14.908 | 6.665  | 0.133                                            | 0.400         | 0.600         | 0.000                 | 0.000                        | 0.000                     | 0.000                     | 0.00              |
| 29-Oct                       | 10                                           | 4.470  | 10.649 | 4.760  | 0.095                                            | 0.286         | 0.428         | 0.000                 | 0.000                        | 0.000                     | 0.000                     | 0.00              |
| 30-Oct                       | 13                                           | 5.812  | 13.844 | 6.189  | 0.124                                            | 0.371         | 0.557         | 0.000                 | 0.000                        | 0.000                     | 0.000                     | 0.00              |
| 31-Oct                       | 13                                           | 5.812  | 13.844 | 6.189  | 0.124                                            | 0.371         | 0.557         | 0.680                 | 0.000                        | 0.000                     | 0.000                     | 0.00              |
| 01-Nov                       | 16                                           | 7.153  | 17.038 | 7.617  | 0.152                                            | 0.457         | 0.686         | 0.000                 | 0.000                        | 0.000                     | 0.000                     | 0.00              |
| 02-Nov                       | 21                                           | 9.388  | 22.363 | 9.997  | 0.200                                            | 0.600         | 0.900         | 0.180                 | 0.000                        | 0.000                     | 0.000                     | 0.00              |
| 03-Nov                       | 21                                           | 9.388  | 22.363 | 9.997  | 0.200                                            | 0.600         | 0.900         | 0.000                 | 0.000                        | 0.000                     | 0.000                     | 0.00              |
| 04-Nov                       | 14                                           | 6.259  | 14.908 | 6.665  | 0.133                                            | 0.400         | 0.600         | 0.000                 | 0.000                        | 0.000                     | 0.000                     | 0.00              |
| 05-Nov                       | 17                                           | 7.600  | 18.103 | 8.093  | 0.162                                            | 0.486         | 0.728         | 0.000                 | 0.000                        | 0.000                     | 0.000                     | 0.00              |
| 06-Nov                       | 11                                           | 4.917  | 11.714 | 5.237  | 0.105                                            | 0.314         | 0.471         | 0.005                 | 0.000                        | 0.000                     | 0.000                     | 0.00              |
| 07-Nov                       | 17                                           | 7.600  | 18.103 | 8.093  | 0.162                                            | 0.486         | 0.728         | 0.150                 | 0.000                        | 0.000                     | 0.000                     | 0.00              |
| 08-Nov                       | 18                                           | 8.047  | 19.168 | 8.569  | 0.171                                            | 0.514         | 0.771         | 0.000                 | 0.000                        | 0.000                     | 0.000                     | 0.00              |
| 09-Nov                       | 15                                           | 6.706  | 15.973 | 7.141  | 0.143                                            | 0.428         | 0.643         | 0.000                 | 0.000                        | 0.000                     | 0.000                     | 0.00              |
| 10-Nov                       | 16                                           | 7.153  | 17.038 | 7.617  | 0.152                                            | 0.457         | 0.686         | 0.000                 | 0.000                        | 0.000                     | 0.000                     | 0.00              |
| 11-Nov                       | 13                                           | 5.812  | 13.844 | 6.189  | 0.124                                            | 0.371         | 0.557         | 0.000                 | 0.000                        | 0.000                     | 0.000                     | 0.00              |
| 12-Nov                       | 15                                           | 6.706  | 15.973 | 7.141  | 0.143                                            | 0.428         | 0.643         | 0.280                 | 0.000                        | 0.000                     | 0.000                     | 0.00              |
| 13-Nov                       | 16                                           | 7.153  | 17.038 | 7.617  | 0.152                                            | 0.457         | 0.686         | 0.650                 | 0.000                        | 0.000                     | 0.000                     | 0.00              |
| 14-Nov                       | 28                                           | 12.517 | 29.817 | 13.329 | 0.267                                            | 0.800         | 1.200         | 0.000                 | 0.000                        | 0.000                     | 6.363                     | 11.91             |
| 15-Nov                       | 13                                           | 5.812  | 13.844 | 6.189  | 0.124                                            | 0.371         | 0.557         | 0.000                 | 0.000                        | 0.000                     | 0.000                     | 0.00              |
| 16-Nov                       | 14                                           | 6.259  | 14.908 | 6.665  | 0.133                                            | 0.400         | 0.600         | 0.005                 | 0.000                        | 0.000                     | 0.000                     | 0.00              |
| 17-Nov                       | 15                                           | 6.706  | 15.973 | 7.141  | 0.143                                            | 0.428         | 0.643         | 0.000                 | 0.000                        | 0.000                     | 0.000                     | 0.00              |
| 18-Nov                       | 13                                           | 5.812  | 13.844 | 6.189  | 0.124                                            | 0.371         | 0.557         | 0.000                 | 0.000                        | 0.000                     | 0.000                     | 0.00              |
| 19-Nov                       | 8                                            | 3.576  | 8.519  | 3.808  | 0.076                                            | 0.229         | 0.343         | 0.005                 | 0.000                        | 0.000                     | 0.000                     | 0.00              |
| 20-Nov                       | 14                                           | 6.259  | 14.908 | 6.665  | 0.133                                            | 0.400         | 0.600         | 0.000                 | 0.000                        | 0.000                     | 0.000                     | 0.00              |
| 21-Nov                       | 14                                           | 6.259  | 14.908 | 6.665  | 0.133                                            | 0.400         | 0.600         | 0.000                 | 0.000                        | 0.000                     | 0.000                     | 0.00              |
| 22-Nov                       | 14                                           | 6.259  | 14.908 | 6.665  | 0.133                                            | 0.400         | 0.600         | 0.000                 | 0.000                        | 0.000                     | 0.000                     | 0.00              |
| 23-Nov                       | 13                                           | 5.812  | 13.844 | 6.189  | 0.124                                            | 0.371         | 0.557         | 0.005                 | 0.000                        | 0.000                     | 0.000                     | 0.00              |
| 24-Nov                       | 15                                           | 6.706  | 15.973 | 7.141  | 0.143                                            | 0.428         | 0.643         | 0.000                 | 0.000                        | 0.000                     | 0.000                     | 0.00              |
| 25-Nov                       | 18                                           | 8.047  | 19.168 | 8.569  | 0.171                                            | 0.514         | 0.771         | 0.000                 | 0.000                        | 0.000                     | 0.000                     | 0.00              |
| 26-Nov                       | 14                                           | 6.259  | 14.908 | 6.665  | 0.133                                            | 0.400         | 0.600         | 0.000                 | 0.000                        | 0.000                     | 0.000                     | 0.00              |

**FOSTER WHEELER ENVIRONMENTAL CORPORATION**  
**CALCULATION SHEET - EXCEL 5.0**

By: E. Deken, PE  
 Date: 10/23/98  
 Ck'd By: Darrel J. Graziani, P.E.  
 Date: 11/07/98

Cal. No.: 981023ED01  
 Rev. No.: SJRPP 1  
 OFS: 7830.0020.0054

**Project:** JEA St. Johns Power Park

**Subject:** Fugitive Emission Estimates - Wind Erosion Gypsum Storage Pile, Non-Commercial Materials

**Assumptions:**

1. The threshold friction velocity was selected based on data available in AP-42, Section 13.2.5.
2. Roughness height was estimated based on largest values listed in AP-42, Section 13.2.5
3. Pile is always at maximum capacity which is maximizing emissions.

**References:**

1. AP-42, Section 13.2.5, Industrial Wind Erosion
2. 1997 Local Climatological Data, NOAA, National Climatic Data Center

**Erosion Potential Calculations**

Threshold Friction Velocity: **1.02**  
 Roughness Height (m) **0.003**

| Number<br>of<br>Disturbances | Fastest Mile Values<br>Anemometer Height (m) |        |        |        | Equivalent Friction Velocities<br>u*=0.1u* |                                     |                                     | Rain Fall<br>(inches) | Erosion Potential<br>(g/m^2)                    |                                                 |                                                 | Emissions<br>(lb) |
|------------------------------|----------------------------------------------|--------|--------|--------|--------------------------------------------|-------------------------------------|-------------------------------------|-----------------------|-------------------------------------------------|-------------------------------------------------|-------------------------------------------------|-------------------|
|                              | 6.1                                          |        | 10     |        | (m/s)                                      |                                     |                                     |                       | (g/m^2)                                         |                                                 |                                                 |                   |
|                              | (mph)                                        | (m/s)  | (mph)  | (m/s)  | u <sub>s</sub> /u <sub>*</sub> :0.2        | u <sub>s</sub> /u <sub>*</sub> :0.6 | u <sub>s</sub> /u <sub>*</sub> :0.9 |                       | 36% Pile<br>u <sub>s</sub> /u <sub>*</sub> :0.2 | 50% Pile<br>u <sub>s</sub> /u <sub>*</sub> :0.6 | 14% Pile<br>u <sub>s</sub> /u <sub>*</sub> :0.9 |                   |
| 27-Nov                       | 15                                           | 6.706  | 15.973 | 7.141  | 0.143                                      | 0.428                               | 0.643                               | 0.000                 | 0.000                                           | 0.000                                           | 0.000                                           | 0.00              |
| 28-Nov                       | 9                                            | 4.023  | 9.584  | 4.284  | 0.086                                      | 0.257                               | 0.386                               | 0.005                 | 0.000                                           | 0.000                                           | 0.000                                           | 0.00              |
| 29-Nov                       | 25                                           | 11.176 | 26.622 | 11.901 | 0.238                                      | 0.714                               | 1.071                               | 1.130                 | 0.000                                           | 0.000                                           | 0.000                                           | 0.00              |
| 30-Nov                       | 21                                           | 9.388  | 22.363 | 9.997  | 0.200                                      | 0.600                               | 0.900                               | 0.020                 | 0.000                                           | 0.000                                           | 0.000                                           | 0.00              |
| 01-Dec                       | 20                                           | 8.941  | 21.298 | 9.521  | 0.190                                      | 0.571                               | 0.857                               | 0.000                 | 0.000                                           | 0.000                                           | 0.000                                           | 0.00              |
| 02-Dec                       | 16                                           | 7.153  | 17.038 | 7.617  | 0.152                                      | 0.457                               | 0.686                               | 0.000                 | 0.000                                           | 0.000                                           | 0.000                                           | 0.00              |
| 03-Dec                       | 15                                           | 6.706  | 15.973 | 7.141  | 0.143                                      | 0.428                               | 0.643                               | 0.100                 | 0.000                                           | 0.000                                           | 0.000                                           | 0.00              |
| 04-Dec                       | 21                                           | 9.388  | 22.363 | 9.997  | 0.200                                      | 0.600                               | 0.900                               | 0.100                 | 0.000                                           | 0.000                                           | 0.000                                           | 0.00              |
| 05-Dec                       | 20                                           | 8.941  | 21.298 | 9.521  | 0.190                                      | 0.571                               | 0.857                               | 0.000                 | 0.000                                           | 0.000                                           | 0.000                                           | 0.00              |
| 06-Dec                       | 20                                           | 8.941  | 21.298 | 9.521  | 0.190                                      | 0.571                               | 0.857                               | 0.000                 | 0.000                                           | 0.000                                           | 0.000                                           | 0.00              |
| 07-Dec                       | 11                                           | 4.917  | 11.714 | 5.237  | 0.105                                      | 0.314                               | 0.471                               | 0.000                 | 0.000                                           | 0.000                                           | 0.000                                           | 0.00              |
| 08-Dec                       | 14                                           | 6.259  | 14.908 | 6.665  | 0.133                                      | 0.400                               | 0.600                               | 0.060                 | 0.000                                           | 0.000                                           | 0.000                                           | 0.00              |
| 09-Dec                       | 11                                           | 4.917  | 11.714 | 5.237  | 0.105                                      | 0.314                               | 0.471                               | 0.110                 | 0.000                                           | 0.000                                           | 0.000                                           | 0.00              |
| 10-Dec                       | 37                                           | 16.540 | 39.401 | 17.614 | 0.352                                      | 1.057                               | 1.585                               | 2.860                 | 0.000                                           | 0.000                                           | 0.000                                           | 0.00              |
| 11-Dec                       | 15                                           | 6.706  | 15.973 | 7.141  | 0.143                                      | 0.428                               | 0.643                               | 0.005                 | 0.000                                           | 0.000                                           | 0.000                                           | 0.00              |
| 12-Dec                       | 21                                           | 9.388  | 22.363 | 9.997  | 0.200                                      | 0.600                               | 0.900                               | 2.720                 | 0.000                                           | 0.000                                           | 0.000                                           | 0.00              |
| 13-Dec                       | 13                                           | 5.812  | 13.844 | 6.189  | 0.124                                      | 0.371                               | 0.557                               | 0.300                 | 0.000                                           | 0.000                                           | 0.000                                           | 0.00              |
| 14-Dec                       | 20                                           | 8.941  | 21.298 | 9.521  | 0.190                                      | 0.571                               | 0.857                               | 1.370                 | 0.000                                           | 0.000                                           | 0.000                                           | 0.00              |
| 15-Dec                       | 26                                           | 11.623 | 27.687 | 12.377 | 0.248                                      | 0.743                               | 1.114                               | 1.590                 | 0.000                                           | 0.000                                           | 0.000                                           | 0.00              |
| 16-Dec                       | 17                                           | 7.600  | 18.103 | 8.093  | 0.162                                      | 0.486                               | 0.728                               | 0.000                 | 0.000                                           | 0.000                                           | 0.000                                           | 0.00              |
| 17-Dec                       | 14                                           | 6.259  | 14.908 | 6.665  | 0.133                                      | 0.400                               | 0.600                               | 0.000                 | 0.000                                           | 0.000                                           | 0.000                                           | 0.00              |
| 18-Dec                       | 13                                           | 5.812  | 13.844 | 6.189  | 0.124                                      | 0.371                               | 0.557                               | 0.000                 | 0.000                                           | 0.000                                           | 0.000                                           | 0.00              |
| 19-Dec                       | 7                                            | 3.129  | 7.454  | 3.332  | 0.067                                      | 0.200                               | 0.300                               | 0.000                 | 0.000                                           | 0.000                                           | 0.000                                           | 0.00              |
| 20-Dec                       | 13                                           | 5.812  | 13.844 | 6.189  | 0.124                                      | 0.371                               | 0.557                               | 0.000                 | 0.000                                           | 0.000                                           | 0.000                                           | 0.00              |
| 21-Dec                       | 14                                           | 6.259  | 14.908 | 6.665  | 0.133                                      | 0.400                               | 0.600                               | 0.000                 | 0.000                                           | 0.000                                           | 0.000                                           | 0.00              |
| 22-Dec                       | 16                                           | 7.153  | 17.038 | 7.617  | 0.152                                      | 0.457                               | 0.686                               | 0.010                 | 0.000                                           | 0.000                                           | 0.000                                           | 0.00              |
| 23-Dec                       | 13                                           | 5.812  | 13.844 | 6.189  | 0.124                                      | 0.371                               | 0.557                               | 0.030                 | 0.000                                           | 0.000                                           | 0.000                                           | 0.00              |
| 24-Dec                       | 15                                           | 6.706  | 15.973 | 7.141  | 0.143                                      | 0.428                               | 0.643                               | 0.190                 | 0.000                                           | 0.000                                           | 0.000                                           | 0.00              |
| 25-Dec                       | 14                                           | 6.259  | 14.908 | 6.665  | 0.133                                      | 0.400                               | 0.600                               | 0.090                 | 0.000                                           | 0.000                                           | 0.000                                           | 0.00              |
| 26-Dec                       | 13                                           | 5.812  | 13.844 | 6.189  | 0.124                                      | 0.371                               | 0.557                               | 0.170                 | 0.000                                           | 0.000                                           | 0.000                                           | 0.00              |
| 27-Dec                       | 25                                           | 11.176 | 26.622 | 11.901 | 0.238                                      | 0.714                               | 1.071                               | 0.040                 | 0.000                                           | 0.000                                           | 0.000                                           | 0.00              |
| 28-Dec                       | 13                                           | 5.812  | 13.844 | 6.189  | 0.124                                      | 0.371                               | 0.557                               | 0.000                 | 0.000                                           | 0.000                                           | 0.000                                           | 0.00              |
| 29-Dec                       | 26                                           | 11.623 | 27.687 | 12.377 | 0.248                                      | 0.743                               | 1.114                               | 0.030                 | 0.000                                           | 0.000                                           | 0.000                                           | 0.00              |
| 30-Dec                       | 26                                           | 11.623 | 27.687 | 12.377 | 0.248                                      | 0.743                               | 1.114                               | 0.000                 | 0.000                                           | 0.000                                           | 2.861                                           | 5.36              |
| 31-Dec                       | 25                                           | 11.176 | 26.622 | 11.901 | 0.238                                      | 0.714                               | 1.071                               | 0.000                 | 0.000                                           | 0.000                                           | 1.429                                           | 2.68              |
| Totals:                      |                                              |        |        |        |                                            |                                     |                                     |                       | 0.00                                            | 0.00                                            | 30.94                                           | 57.91             |
| Worst Case Day               |                                              |        |        |        |                                            |                                     |                                     |                       | 0.000                                           | 0.000                                           | 6.363                                           |                   |

**Storage Pile Calculations**

Control Efficiency 85.00%  
 Rain Days (>0.01") 120 AP42, Section 13.2.2  
 Storage Pile Surface Area 6070.29  
 Uncontrolled (TPY) 0.029  
 Controlled (TPY) 0.004  
 Worst Case Day (lb/24") 2 PM10 - AP42 Section 13.2.5  
 Worst Case Day (gps) 0.01 Per AP42, Section 13.2.5  
 #Days Winds > 12 MPH 343  
 #Days Rain > 0.01 " 130  
 Worst Case Day (gps) 0.036 Per EPA Background Document

**FOSTER WHEELER ENVIRONMENTAL CORPORATION**  
**CALCULATION SHEET - EXCEL 5.0**

**By:** E. Deken, PE  
**Date:** 10/23/98  
**Ch'd By:** Darrel J. Graziani, P.E.  
**Date:** 11/07/98

**Cal. No.:** 981023ED01  
**Rev. No.:** SJRPP 1  
**OFS:** 7830.0020.0054

**Project:** JEA St. Johns Power Park

**Subject:** Fugitive Emission Estimates - Wind Erosion Ash Disposal Area

**Assumptions:**

1. The threshold friction velocity was selected based on data available in AP-42, Section 13.2.5.
2. Roughness height was estimated based on largest values listed in AP-42, Section 13.2.5
3. Pile is always at maximum capacity which is maximizing emissions.

**References:**

1. AP-42, Section 13.2.5, Industrial Wind Erosion
2. 1997 Local Climatological Data, NOAA, National Climatic Data Center

**Erosion Potential Calculations**

Threshold Friction Velocity: **1.03**  
 Roughness Height (m): **0.003**

| Number<br>of<br>Disturbances | Fastest Mile Values<br>Anemometer Height (m) |        |             |        | Equivalent Friction Velocities<br>u*=0.1u* |                                     |                                     | Rain Fall<br>(inches) | Erosion Potential                               |                                                 |                                                 | Emissions |
|------------------------------|----------------------------------------------|--------|-------------|--------|--------------------------------------------|-------------------------------------|-------------------------------------|-----------------------|-------------------------------------------------|-------------------------------------------------|-------------------------------------------------|-----------|
|                              |                                              |        |             |        | (m/s)                                      |                                     |                                     |                       | (g/m^2)                                         |                                                 |                                                 |           |
|                              | 6:1<br>(mph)                                 | (m/s)  | 10<br>(mph) | (m/s)  | u <sub>a</sub> /u <sub>t</sub> :0.2        | u <sub>a</sub> /u <sub>t</sub> :0.6 | u <sub>a</sub> /u <sub>t</sub> :0.9 |                       | 36% Pile<br>u <sub>a</sub> /u <sub>t</sub> :0.2 | 50% Pile<br>u <sub>a</sub> /u <sub>t</sub> :0.6 | 14% Pile<br>u <sub>a</sub> /u <sub>t</sub> :0.9 |           |
| 01-Jan                       | 15                                           | 6.706  | 15.973      | 7.141  | 0.143                                      | 0.428                               | 0.643                               | 0.000                 | 0.000                                           | 0.000                                           | 0.000                                           | 0.00      |
| 02-Jan                       | 14                                           | 6.259  | 14.908      | 6.665  | 0.133                                      | 0.400                               | 0.600                               | 0.000                 | 0.000                                           | 0.000                                           | 0.000                                           | 0.00      |
| 03-Jan                       | 16                                           | 7.153  | 17.038      | 7.617  | 0.152                                      | 0.457                               | 0.686                               | 0.000                 | 0.000                                           | 0.000                                           | 0.000                                           | 0.00      |
| 04-Jan                       | 15                                           | 6.706  | 15.973      | 7.141  | 0.143                                      | 0.428                               | 0.643                               | 0.000                 | 0.000                                           | 0.000                                           | 0.000                                           | 0.00      |
| 05-Jan                       | 22                                           | 9.835  | 23.428      | 10.473 | 0.209                                      | 0.628                               | 0.943                               | 0.120                 | 0.000                                           | 0.000                                           | 0.000                                           | 0.00      |
| 06-Jan                       | 9                                            | 4.023  | 9.584       | 4.284  | 0.086                                      | 0.257                               | 0.386                               | 0.280                 | 0.000                                           | 0.000                                           | 0.000                                           | 0.00      |
| 07-Jan                       | 14                                           | 6.259  | 14.908      | 6.665  | 0.133                                      | 0.400                               | 0.600                               | 0.030                 | 0.000                                           | 0.000                                           | 0.000                                           | 0.00      |
| 08-Jan                       | 17                                           | 7.600  | 18.103      | 8.093  | 0.162                                      | 0.486                               | 0.728                               | 0.040                 | 0.000                                           | 0.000                                           | 0.000                                           | 0.00      |
| 09-Jan                       | 20                                           | 8.941  | 21.298      | 9.521  | 0.190                                      | 0.571                               | 0.857                               | 0.600                 | 0.000                                           | 0.000                                           | 0.000                                           | 0.00      |
| 10-Jan                       | 26                                           | 11.623 | 27.687      | 12.377 | 0.248                                      | 0.743                               | 1.114                               | 0.000                 | 0.000                                           | 0.000                                           | 2.508                                           | 31.29     |
| 11-Jan                       | 14                                           | 6.259  | 14.908      | 6.665  | 0.133                                      | 0.400                               | 0.600                               | 0.000                 | 0.000                                           | 0.000                                           | 0.000                                           | 0.00      |
| 12-Jan                       | 10                                           | 4.470  | 10.649      | 4.760  | 0.095                                      | 0.286                               | 0.428                               | 0.000                 | 0.000                                           | 0.000                                           | 0.000                                           | 0.00      |
| 13-Jan                       | 15                                           | 6.706  | 15.973      | 7.141  | 0.143                                      | 0.428                               | 0.643                               | 0.000                 | 0.000                                           | 0.000                                           | 0.000                                           | 0.00      |
| 14-Jan                       | 20                                           | 8.941  | 21.298      | 9.521  | 0.190                                      | 0.571                               | 0.857                               | 0.000                 | 0.000                                           | 0.000                                           | 0.000                                           | 0.00      |
| 15-Jan                       | 16                                           | 7.153  | 17.038      | 7.617  | 0.152                                      | 0.457                               | 0.686                               | 0.005                 | 0.000                                           | 0.000                                           | 0.000                                           | 0.00      |
| 16-Jan                       | 23                                           | 10.282 | 24.492      | 10.949 | 0.219                                      | 0.657                               | 0.985                               | 0.330                 | 0.000                                           | 0.000                                           | 0.000                                           | 0.00      |
| 17-Jan                       | 24                                           | 10.729 | 25.557      | 11.425 | 0.229                                      | 0.686                               | 1.028                               | 0.000                 | 0.000                                           | 0.000                                           | 0.000                                           | 0.00      |
| 18-Jan                       | 21                                           | 9.388  | 22.363      | 9.997  | 0.200                                      | 0.600                               | 0.900                               | 0.000                 | 0.000                                           | 0.000                                           | 0.000                                           | 0.00      |
| 19-Jan                       | 17                                           | 7.600  | 18.103      | 8.093  | 0.162                                      | 0.486                               | 0.728                               | 0.000                 | 0.000                                           | 0.000                                           | 0.000                                           | 0.00      |
| 20-Jan                       | 15                                           | 6.706  | 15.973      | 7.141  | 0.143                                      | 0.428                               | 0.643                               | 0.000                 | 0.000                                           | 0.000                                           | 0.000                                           | 0.00      |
| 21-Jan                       | 16                                           | 7.153  | 17.038      | 7.617  | 0.152                                      | 0.457                               | 0.686                               | 0.000                 | 0.000                                           | 0.000                                           | 0.000                                           | 0.00      |
| 22-Jan                       | 22                                           | 9.835  | 23.428      | 10.473 | 0.209                                      | 0.628                               | 0.943                               | 0.000                 | 0.000                                           | 0.000                                           | 0.000                                           | 0.00      |
| 23-Jan                       | 15                                           | 6.706  | 15.973      | 7.141  | 0.143                                      | 0.428                               | 0.643                               | 0.005                 | 0.000                                           | 0.000                                           | 0.000                                           | 0.00      |
| 24-Jan                       | 18                                           | 8.047  | 19.168      | 8.569  | 0.171                                      | 0.514                               | 0.771                               | 0.000                 | 0.000                                           | 0.000                                           | 0.000                                           | 0.00      |
| 25-Jan                       | 18                                           | 8.047  | 19.168      | 8.569  | 0.171                                      | 0.514                               | 0.771                               | 1.200                 | 0.000                                           | 0.000                                           | 0.000                                           | 0.00      |
| 26-Jan                       | 17                                           | 7.600  | 18.103      | 8.093  | 0.162                                      | 0.486                               | 0.728                               | 0.000                 | 0.000                                           | 0.000                                           | 0.000                                           | 0.00      |
| 27-Jan                       | 18                                           | 8.047  | 19.168      | 8.569  | 0.171                                      | 0.514                               | 0.771                               | 0.000                 | 0.000                                           | 0.000                                           | 0.000                                           | 0.00      |
| 28-Jan                       | 17                                           | 7.600  | 18.103      | 8.093  | 0.162                                      | 0.486                               | 0.728                               | 0.000                 | 0.000                                           | 0.000                                           | 0.000                                           | 0.00      |
| 29-Jan                       | 22                                           | 9.835  | 23.428      | 10.473 | 0.209                                      | 0.628                               | 0.943                               | 0.000                 | 0.000                                           | 0.000                                           | 0.000                                           | 0.00      |
| 30-Jan                       | 15                                           | 6.706  | 15.973      | 7.141  | 0.143                                      | 0.428                               | 0.643                               | 0.310                 | 0.000                                           | 0.000                                           | 0.000                                           | 0.00      |
| 31-Jan                       | 15                                           | 6.706  | 15.973      | 7.141  | 0.143                                      | 0.428                               | 0.643                               | 0.000                 | 0.000                                           | 0.000                                           | 0.000                                           | 0.00      |
| 01-Feb                       | 21                                           | 9.388  | 22.363      | 9.997  | 0.200                                      | 0.600                               | 0.900                               | 0.000                 | 0.000                                           | 0.000                                           | 0.000                                           | 0.00      |
| 02-Feb                       | 10                                           | 4.470  | 10.649      | 4.760  | 0.095                                      | 0.286                               | 0.428                               | 0.000                 | 0.000                                           | 0.000                                           | 0.000                                           | 0.00      |
| 03-Feb                       | 13                                           | 5.812  | 13.844      | 6.189  | 0.124                                      | 0.371                               | 0.557                               | 0.000                 | 0.000                                           | 0.000                                           | 0.000                                           | 0.00      |
| 04-Feb                       | 15                                           | 6.706  | 15.973      | 7.141  | 0.143                                      | 0.428                               | 0.643                               | 0.000                 | 0.000                                           | 0.000                                           | 0.000                                           | 0.00      |
| 05-Feb                       | 17                                           | 7.600  | 18.103      | 8.093  | 0.162                                      | 0.486                               | 0.728                               | 0.000                 | 0.000                                           | 0.000                                           | 0.000                                           | 0.00      |
| 06-Feb                       | 14                                           | 6.259  | 14.908      | 6.665  | 0.133                                      | 0.400                               | 0.600                               | 0.000                 | 0.000                                           | 0.000                                           | 0.000                                           | 0.00      |
| 07-Feb                       | 11                                           | 4.917  | 11.714      | 5.237  | 0.105                                      | 0.314                               | 0.471                               | 0.000                 | 0.000                                           | 0.000                                           | 0.000                                           | 0.00      |
| 08-Feb                       | 21                                           | 9.388  | 22.363      | 9.997  | 0.200                                      | 0.600                               | 0.900                               | 0.030                 | 0.000                                           | 0.000                                           | 0.000                                           | 0.00      |
| 09-Feb                       | 16                                           | 7.153  | 17.038      | 7.617  | 0.152                                      | 0.457                               | 0.686                               | 0.005                 | 0.000                                           | 0.000                                           | 0.000                                           | 0.00      |
| 10-Feb                       | 11                                           | 4.917  | 11.714      | 5.237  | 0.105                                      | 0.314                               | 0.471                               | 0.005                 | 0.000                                           | 0.000                                           | 0.000                                           | 0.00      |
| 11-Feb                       | 10                                           | 4.470  | 10.649      | 4.760  | 0.095                                      | 0.286                               | 0.428                               | 0.000                 | 0.000                                           | 0.000                                           | 0.000                                           | 0.00      |
| 12-Feb                       | 14                                           | 6.259  | 14.908      | 6.665  | 0.133                                      | 0.400                               | 0.600                               | 0.000                 | 0.000                                           | 0.000                                           | 0.000                                           | 0.00      |
| 13-Feb                       | 18                                           | 8.047  | 19.168      | 8.569  | 0.171                                      | 0.514                               | 0.771                               | 0.130                 | 0.000                                           | 0.000                                           | 0.000                                           | 0.00      |
| 14-Feb                       | 18                                           | 8.047  | 19.168      | 8.569  | 0.171                                      | 0.514                               | 0.771                               | 0.040                 | 0.000                                           | 0.000                                           | 0.000                                           | 0.00      |
| 15-Feb                       | 18                                           | 8.047  | 19.168      | 8.569  | 0.171                                      | 0.514                               | 0.771                               | 0.400                 | 0.000                                           | 0.000                                           | 0.000                                           | 0.00      |
| 16-Feb                       | 15                                           | 6.706  | 15.973      | 7.141  | 0.143                                      | 0.428                               | 0.643                               | 0.000                 | 0.000                                           | 0.000                                           | 0.000                                           | 0.00      |
| 17-Feb                       | 20                                           | 8.941  | 21.298      | 9.521  | 0.190                                      | 0.571                               | 0.857                               | 0.000                 | 0.000                                           | 0.000                                           | 0.000                                           | 0.00      |
| 18-Feb                       | 16                                           | 7.153  | 17.038      | 7.617  | 0.152                                      | 0.457                               | 0.686                               | 0.000                 | 0.000                                           | 0.000                                           | 0.000                                           | 0.00      |
| 19-Feb                       | 14                                           | 6.259  | 14.908      | 6.665  | 0.133                                      | 0.400                               | 0.600                               | 0.005                 | 0.000                                           | 0.000                                           | 0.000                                           | 0.00      |
| 20-Feb                       | 20                                           | 8.941  | 21.298      | 9.521  | 0.190                                      | 0.571                               | 0.857                               | 0.000                 | 0.000                                           | 0.000                                           | 0.000                                           | 0.00      |
| 21-Feb                       | 24                                           | 10.729 | 25.557      | 11.425 | 0.229                                      | 0.686                               | 1.028                               | 0.000                 | 0.000                                           | 0.000                                           | 0.000                                           | 0.00      |
| 22-Feb                       | 17                                           | 7.600  | 18.103      | 8.093  | 0.162                                      | 0.486                               | 0.728                               | 0.310                 | 0.000                                           | 0.000                                           | 0.000                                           | 0.00      |
| 23-Feb                       | 18                                           | 8.047  | 19.168      | 8.569  | 0.171                                      | 0.514                               | 0.771                               | 0.005                 | 0.000                                           | 0.000                                           | 0.000                                           | 0.00      |
| 24-Feb                       | 18                                           | 8.047  | 19.168      | 8.569  | 0.171                                      | 0.514                               | 0.771                               | 0.140                 | 0.000                                           | 0.000                                           | 0.000                                           | 0.00      |

**FOSTER WHEELER ENVIRONMENTAL CORPORATION**  
**CALCULATION SHEET - EXCEL 5.0**

By: E. Deken, PE  
 Date: 10/23/98  
 Ck'd By: Darrel J. Graziani, P.E.  
 Date: 11/07/98

Cal. No.: 981023ED01  
 Rev. No.: SJRPP 1  
 OFS: 7830.0020.0054

**Project:** JEA St. Johns Power Park

**Subject:** Fugitive Emission Estimates - Wind Erosion Ash Disposal Area

**Assumptions:**

1. The threshold friction velocity was selected based on data available in AP-42, Section 13.2.5.
2. Roughness height was estimated based on largest values listed in AP-42, Section 13.2.5
3. Pile is always at maximum capacity which is maximizing emissions.

**References:**

1. AP-42, Section 13.2.5, Industrial Wind Erosion
2. 1997 Local Climatological Data, NOAA, National Climatic Data Center

**Erosion Potential Calculations**

Threshold Friction Velocity: **1.03**  
 Roughness Height (m) **0.003**

| Number<br>of<br>Disturbances | Fastest Mile Values<br>Anemometer Height (m) |        |        |        | Equivalent Friction Velocities<br>u*=0.1u* |                                     |                                     | Rain Fall<br>(inches) | Erosion Potential<br>(g/m^2)                    |                                                 |                                                 | Emissions<br>(lb) |
|------------------------------|----------------------------------------------|--------|--------|--------|--------------------------------------------|-------------------------------------|-------------------------------------|-----------------------|-------------------------------------------------|-------------------------------------------------|-------------------------------------------------|-------------------|
|                              | 6.1                                          |        | 10     |        | (m/s)                                      |                                     |                                     |                       | (g/m^2)                                         |                                                 |                                                 |                   |
|                              | (mph)                                        | (m/s)  | (mph)  | (m/s)  | u <sub>a</sub> /u <sub>*</sub> :0.2        | u <sub>a</sub> /u <sub>*</sub> :0.6 | u <sub>a</sub> /u <sub>*</sub> :0.9 |                       | 36% Pile<br>u <sub>a</sub> /u <sub>*</sub> :0.2 | 50% Pile<br>u <sub>a</sub> /u <sub>*</sub> :0.6 | 14% Pile<br>u <sub>a</sub> /u <sub>*</sub> :0.9 |                   |
| 25-Feb                       | 21                                           | 9.388  | 22.363 | 9.997  | 0.200                                      | 0.600                               | 0.900                               | 0.230                 | 0.000                                           | 0.000                                           | 0.000                                           | 0.00              |
| 26-Feb                       | 15                                           | 6.706  | 15.973 | 7.141  | 0.143                                      | 0.428                               | 0.643                               | 0.000                 | 0.000                                           | 0.000                                           | 0.000                                           | 0.00              |
| 27-Feb                       | 20                                           | 8.941  | 21.298 | 9.521  | 0.190                                      | 0.571                               | 0.857                               | 0.000                 | 0.000                                           | 0.000                                           | 0.000                                           | 0.00              |
| 28-Feb                       | 20                                           | 8.941  | 21.298 | 9.521  | 0.190                                      | 0.571                               | 0.857                               | 0.000                 | 0.000                                           | 0.000                                           | 0.000                                           | 0.00              |
| 01-Mar                       | 20                                           | 8.941  | 21.298 | 9.521  | 0.190                                      | 0.571                               | 0.857                               | 0.000                 | 0.000                                           | 0.000                                           | 0.000                                           | 0.00              |
| 02-Mar                       | 15                                           | 6.706  | 15.973 | 7.141  | 0.143                                      | 0.428                               | 0.643                               | 0.000                 | 0.000                                           | 0.000                                           | 0.000                                           | 0.00              |
| 03-Mar                       | 22                                           | 9.835  | 23.428 | 10.473 | 0.209                                      | 0.628                               | 0.943                               | 0.000                 | 0.000                                           | 0.000                                           | 0.000                                           | 0.00              |
| 04-Mar                       | 17                                           | 7.600  | 18.103 | 8.093  | 0.162                                      | 0.486                               | 0.728                               | 0.000                 | 0.000                                           | 0.000                                           | 0.000                                           | 0.00              |
| 05-Mar                       | 11                                           | 4.917  | 11.714 | 5.237  | 0.105                                      | 0.314                               | 0.471                               | 0.000                 | 0.000                                           | 0.000                                           | 0.000                                           | 0.00              |
| 06-Mar                       | 24                                           | 10.729 | 25.557 | 11.425 | 0.229                                      | 0.686                               | 1.028                               | 0.005                 | 0.000                                           | 0.000                                           | 0.000                                           | 0.00              |
| 07-Mar                       | 18                                           | 8.047  | 19.168 | 8.569  | 0.171                                      | 0.514                               | 0.771                               | 0.000                 | 0.000                                           | 0.000                                           | 0.000                                           | 0.00              |
| 08-Mar                       | 14                                           | 6.259  | 14.908 | 6.665  | 0.133                                      | 0.400                               | 0.600                               | 0.000                 | 0.000                                           | 0.000                                           | 0.000                                           | 0.00              |
| 09-Mar                       | 20                                           | 8.941  | 21.298 | 9.521  | 0.190                                      | 0.571                               | 0.857                               | 0.000                 | 0.000                                           | 0.000                                           | 0.000                                           | 0.00              |
| 10-Mar                       | 16                                           | 7.153  | 17.038 | 7.617  | 0.152                                      | 0.457                               | 0.686                               | 0.000                 | 0.000                                           | 0.000                                           | 0.000                                           | 0.00              |
| 11-Mar                       | 17                                           | 7.600  | 18.103 | 8.093  | 0.162                                      | 0.486                               | 0.728                               | 0.005                 | 0.000                                           | 0.000                                           | 0.000                                           | 0.00              |
| 12-Mar                       | 20                                           | 8.941  | 21.298 | 9.521  | 0.190                                      | 0.571                               | 0.857                               | 0.000                 | 0.000                                           | 0.000                                           | 0.000                                           | 0.00              |
| 13-Mar                       | 29                                           | 12.964 | 30.882 | 13.805 | 0.276                                      | 0.828                               | 1.242                               | 0.170                 | 0.000                                           | 0.000                                           | 0.000                                           | 0.00              |
| 14-Mar                       | 18                                           | 8.047  | 19.168 | 8.569  | 0.171                                      | 0.514                               | 0.771                               | 0.390                 | 0.000                                           | 0.000                                           | 0.000                                           | 0.00              |
| 15-Mar                       | 15                                           | 6.706  | 15.973 | 7.141  | 0.143                                      | 0.428                               | 0.643                               | 0.000                 | 0.000                                           | 0.000                                           | 0.000                                           | 0.00              |
| 16-Mar                       | 20                                           | 8.941  | 21.298 | 9.521  | 0.190                                      | 0.571                               | 0.857                               | 0.000                 | 0.000                                           | 0.000                                           | 0.000                                           | 0.00              |
| 17-Mar                       | 18                                           | 8.047  | 19.168 | 8.569  | 0.171                                      | 0.514                               | 0.771                               | 0.000                 | 0.000                                           | 0.000                                           | 0.000                                           | 0.00              |
| 18-Mar                       | 15                                           | 6.706  | 15.973 | 7.141  | 0.143                                      | 0.428                               | 0.643                               | 0.005                 | 0.000                                           | 0.000                                           | 0.000                                           | 0.00              |
| 19-Mar                       | 18                                           | 8.047  | 19.168 | 8.569  | 0.171                                      | 0.514                               | 0.771                               | 0.000                 | 0.000                                           | 0.000                                           | 0.000                                           | 0.00              |
| 20-Mar                       | 13                                           | 5.812  | 13.844 | 6.189  | 0.124                                      | 0.371                               | 0.557                               | 0.030                 | 0.000                                           | 0.000                                           | 0.000                                           | 0.00              |
| 21-Mar                       | 14                                           | 6.259  | 14.908 | 6.665  | 0.133                                      | 0.400                               | 0.600                               | 0.470                 | 0.000                                           | 0.000                                           | 0.000                                           | 0.00              |
| 22-Mar                       | 21                                           | 9.388  | 22.363 | 9.997  | 0.200                                      | 0.600                               | 0.900                               | 0.000                 | 0.000                                           | 0.000                                           | 0.000                                           | 0.00              |
| 23-Mar                       | 17                                           | 7.600  | 18.103 | 8.093  | 0.162                                      | 0.486                               | 0.728                               | 0.000                 | 0.000                                           | 0.000                                           | 0.000                                           | 0.00              |
| 24-Mar                       | 25                                           | 11.176 | 26.622 | 11.901 | 0.238                                      | 0.714                               | 1.071                               | 0.005                 | 0.000                                           | 0.000                                           | 1.126                                           | 14.05             |
| 25-Mar                       | 24                                           | 10.729 | 25.557 | 11.425 | 0.229                                      | 0.686                               | 1.028                               | 0.490                 | 0.000                                           | 0.000                                           | 0.000                                           | 0.00              |
| 26-Mar                       | 17                                           | 7.600  | 18.103 | 8.093  | 0.162                                      | 0.486                               | 0.728                               | 0.020                 | 0.000                                           | 0.000                                           | 0.000                                           | 0.00              |
| 27-Mar                       | 13                                           | 5.812  | 13.844 | 6.189  | 0.124                                      | 0.371                               | 0.557                               | 0.000                 | 0.000                                           | 0.000                                           | 0.000                                           | 0.00              |
| 28-Mar                       | 17                                           | 7.600  | 18.103 | 8.093  | 0.162                                      | 0.486                               | 0.728                               | 0.000                 | 0.000                                           | 0.000                                           | 0.000                                           | 0.00              |
| 29-Mar                       | 22                                           | 9.835  | 23.428 | 10.473 | 0.209                                      | 0.628                               | 0.943                               | 0.005                 | 0.000                                           | 0.000                                           | 0.000                                           | 0.00              |
| 30-Mar                       | 30                                           | 13.411 | 31.947 | 14.281 | 0.286                                      | 0.857                               | 1.285                               | 0.270                 | 0.000                                           | 0.000                                           | 0.000                                           | 0.00              |
| 31-Mar                       | 25                                           | 11.176 | 26.622 | 11.901 | 0.238                                      | 0.714                               | 1.071                               | 0.005                 | 0.000                                           | 0.000                                           | 1.126                                           | 14.05             |
| 01-Apr                       | 15                                           | 6.706  | 15.973 | 7.141  | 0.143                                      | 0.428                               | 0.643                               | 0.000                 | 0.000                                           | 0.000                                           | 0.000                                           | 0.00              |
| 02-Apr                       | 21                                           | 9.388  | 22.363 | 9.997  | 0.200                                      | 0.600                               | 0.900                               | 0.000                 | 0.000                                           | 0.000                                           | 0.000                                           | 0.00              |
| 03-Apr                       | 16                                           | 7.153  | 17.038 | 7.617  | 0.152                                      | 0.457                               | 0.686                               | 0.000                 | 0.000                                           | 0.000                                           | 0.000                                           | 0.00              |
| 04-Apr                       | 16                                           | 7.153  | 17.038 | 7.617  | 0.152                                      | 0.457                               | 0.686                               | 0.000                 | 0.000                                           | 0.000                                           | 0.000                                           | 0.00              |
| 05-Apr                       | 21                                           | 9.388  | 22.363 | 9.997  | 0.200                                      | 0.600                               | 0.900                               | 0.000                 | 0.000                                           | 0.000                                           | 0.000                                           | 0.00              |
| 06-Apr                       | 17                                           | 7.600  | 18.103 | 8.093  | 0.162                                      | 0.486                               | 0.728                               | 0.005                 | 0.000                                           | 0.000                                           | 0.000                                           | 0.00              |
| 07-Apr                       | 18                                           | 8.047  | 19.168 | 8.569  | 0.171                                      | 0.514                               | 0.771                               | 0.000                 | 0.000                                           | 0.000                                           | 0.000                                           | 0.00              |
| 08-Apr                       | 21                                           | 9.388  | 22.363 | 9.997  | 0.200                                      | 0.600                               | 0.900                               | 0.000                 | 0.000                                           | 0.000                                           | 0.000                                           | 0.00              |
| 09-Apr                       | 15                                           | 6.706  | 15.973 | 7.141  | 0.143                                      | 0.428                               | 0.643                               | 0.000                 | 0.000                                           | 0.000                                           | 0.000                                           | 0.00              |
| 10-Apr                       | 21                                           | 9.388  | 22.363 | 9.997  | 0.200                                      | 0.600                               | 0.900                               | 0.000                 | 0.000                                           | 0.000                                           | 0.000                                           | 0.00              |
| 11-Apr                       | 21                                           | 9.388  | 22.363 | 9.997  | 0.200                                      | 0.600                               | 0.900                               | 0.005                 | 0.000                                           | 0.000                                           | 0.000                                           | 0.00              |
| 12-Apr                       | 22                                           | 9.835  | 23.428 | 10.473 | 0.209                                      | 0.628                               | 0.943                               | 0.050                 | 0.000                                           | 0.000                                           | 0.000                                           | 0.00              |
| 13-Apr                       | 16                                           | 7.153  | 17.038 | 7.617  | 0.152                                      | 0.457                               | 0.686                               | 0.000                 | 0.000                                           | 0.000                                           | 0.000                                           | 0.00              |
| 14-Apr                       | 14                                           | 6.259  | 14.908 | 6.665  | 0.133                                      | 0.400                               | 0.600                               | 0.550                 | 0.000                                           | 0.000                                           | 0.000                                           | 0.00              |
| 15-Apr                       | 20                                           | 8.941  | 21.298 | 9.521  | 0.190                                      | 0.571                               | 0.857                               | 0.160                 | 0.000                                           | 0.000                                           | 0.000                                           | 0.00              |
| 16-Apr                       | 16                                           | 7.153  | 17.038 | 7.617  | 0.152                                      | 0.457                               | 0.686                               | 0.000                 | 0.000                                           | 0.000                                           | 0.000                                           | 0.00              |
| 17-Apr                       | 24                                           | 10.729 | 25.557 | 11.425 | 0.229                                      | 0.686                               | 1.028                               | 0.000                 | 0.000                                           | 0.000                                           | 0.000                                           | 0.00              |
| 18-Apr                       | 20                                           | 8.941  | 21.298 | 9.521  | 0.190                                      | 0.571                               | 0.857                               | 0.000                 | 0.000                                           | 0.000                                           | 0.000                                           | 0.00              |
| 19-Apr                       | 20                                           | 8.941  | 21.298 | 9.521  | 0.190                                      | 0.571                               | 0.857                               | 0.000                 | 0.000                                           | 0.000                                           | 0.000                                           | 0.00              |
| 20-Apr                       | 18                                           | 8.047  | 19.168 | 8.569  | 0.171                                      | 0.514                               | 0.771                               | 0.000                 | 0.000                                           | 0.000                                           | 0.000                                           | 0.00              |

**FOSTER WHEELER ENVIRONMENTAL CORPORATION**  
**CALCULATION SHEET - EXCEL 5.0**

**By: E. Deken, PE**  
**Date: 10/23/98**  
**Ck'd By: Darrel J. Graziani, P.E.**  
**Date: 11/07/98**

**Cal. No.: 981023ED01**  
**Rev. No.: SJRPP 1**  
**OFS: 7830.0020.0054**

**Project: JEA St. Johns Power Park**

**Subject: Fugitive Emission Estimates - Wind Erosion Ash Disposal Area**

**Assumptions:**

1. The threshold friction velocity was selected based on data available in AP-42, Section 13.2.5.
2. Roughness height was estimated based on largest values listed in AP-42, Section 13.2.5
3. Pile is always at maximum capacity which is maximizing emissions.

**References:**

1. AP-42, Section 13.2.5, Industrial Wind Erosion
2. 1997 Local Climatological Data, NOAA, National Climatic Data Center

**Erosion Potential Calculations**

Threshold Friction Velocity: **1.03**  
 Roughness Height (m) **0.003**

| Number<br>of<br>Disturbances | Fastest Mile Values<br>Anemometer Height (m) |        |        |        | Equivalent Friction Velocities<br>$u^*=0.1u^*$<br>(m/s) |               |               | Rain Fall<br>(inches) | Erosion Potential<br>(g/m <sup>2</sup> ) |                           |                           | Emissions<br>(lb) |
|------------------------------|----------------------------------------------|--------|--------|--------|---------------------------------------------------------|---------------|---------------|-----------------------|------------------------------------------|---------------------------|---------------------------|-------------------|
|                              | 6.1                                          |        | 10     |        | $u_a/u_t:0.2$                                           | $u_a/u_t:0.6$ | $u_a/u_t:0.9$ |                       | (g/m <sup>2</sup> )                      |                           |                           |                   |
|                              | (mph)                                        | (m/s)  | (mph)  | (m/s)  |                                                         |               |               |                       | 36% Pile<br>$u_a/u_t:0.2$                | 50% Pile<br>$u_a/u_t:0.6$ | 14% Pile<br>$u_a/u_t:0.9$ |                   |
| 21-Apr                       | 20                                           | 8.941  | 21.298 | 9.521  | 0.190                                                   | 0.571         | 0.857         | 0.000                 | 0.000                                    | 0.000                     | 0.00                      |                   |
| 22-Apr                       | 23                                           | 10.282 | 24.492 | 10.949 | 0.219                                                   | 0.657         | 0.985         | 0.010                 | 0.000                                    | 0.000                     | 0.00                      |                   |
| 23-Apr                       | 43                                           | 19.223 | 45.790 | 20.470 | 0.409                                                   | 1.228         | 1.842         | 1.150                 | 0.000                                    | 0.000                     | 0.00                      |                   |
| 24-Apr                       | 17                                           | 7.600  | 18.103 | 8.093  | 0.162                                                   | 0.486         | 0.728         | 0.000                 | 0.000                                    | 0.000                     | 0.00                      |                   |
| 25-Apr                       | 16                                           | 7.153  | 17.038 | 7.617  | 0.152                                                   | 0.457         | 0.686         | 0.000                 | 0.000                                    | 0.000                     | 0.00                      |                   |
| 26-Apr                       | 21                                           | 9.388  | 22.363 | 9.997  | 0.200                                                   | 0.600         | 0.900         | 0.049                 | 0.000                                    | 0.000                     | 0.00                      |                   |
| 27-Apr                       | 21                                           | 9.388  | 22.363 | 9.997  | 0.200                                                   | 0.600         | 0.900         | 1.810                 | 0.000                                    | 0.000                     | 0.00                      |                   |
| 28-Apr                       | 32                                           | 14.305 | 34.076 | 15.234 | 0.305                                                   | 0.914         | 1.371         | 0.340                 | 0.000                                    | 0.000                     | 0.00                      |                   |
| 29-Apr                       | 22                                           | 9.835  | 23.428 | 10.473 | 0.209                                                   | 0.628         | 0.943         | 0.000                 | 0.000                                    | 0.000                     | 0.00                      |                   |
| 30-Apr                       | 14                                           | 6.259  | 14.908 | 6.665  | 0.133                                                   | 0.400         | 0.600         | 0.000                 | 0.000                                    | 0.000                     | 0.00                      |                   |
| 01-May                       | 18                                           | 8.047  | 19.168 | 8.569  | 0.171                                                   | 0.514         | 0.771         | 0.000                 | 0.000                                    | 0.000                     | 0.00                      |                   |
| 02-May                       | 15                                           | 6.706  | 15.973 | 7.141  | 0.143                                                   | 0.428         | 0.643         | 0.000                 | 0.000                                    | 0.000                     | 0.00                      |                   |
| 03-May                       | 31                                           | 13.858 | 33.012 | 14.758 | 0.295                                                   | 0.885         | 1.328         | 0.020                 | 0.000                                    | 0.000                     | 0.00                      |                   |
| 04-May                       | 16                                           | 7.153  | 17.038 | 7.617  | 0.152                                                   | 0.457         | 0.686         | 0.000                 | 0.000                                    | 0.000                     | 0.00                      |                   |
| 05-May                       | 16                                           | 7.153  | 17.038 | 7.617  | 0.152                                                   | 0.457         | 0.686         | 0.000                 | 0.000                                    | 0.000                     | 0.00                      |                   |
| 06-May                       | 15                                           | 6.706  | 15.973 | 7.141  | 0.143                                                   | 0.428         | 0.643         | 0.000                 | 0.000                                    | 0.000                     | 0.00                      |                   |
| 07-May                       | 18                                           | 8.047  | 19.168 | 8.569  | 0.171                                                   | 0.514         | 0.771         | 0.000                 | 0.000                                    | 0.000                     | 0.00                      |                   |
| 08-May                       | 14                                           | 6.259  | 14.908 | 6.665  | 0.133                                                   | 0.400         | 0.600         | 0.000                 | 0.000                                    | 0.000                     | 0.00                      |                   |
| 09-May                       | 26                                           | 11.623 | 27.687 | 12.377 | 0.248                                                   | 0.743         | 1.114         | 0.000                 | 0.000                                    | 0.000                     | 2.508                     |                   |
| 10-May                       | 16                                           | 7.153  | 17.038 | 7.617  | 0.152                                                   | 0.457         | 0.686         | 0.000                 | 0.000                                    | 0.000                     | 0.00                      |                   |
| 11-May                       | 17                                           | 7.600  | 18.103 | 8.093  | 0.162                                                   | 0.486         | 0.728         | 0.000                 | 0.000                                    | 0.000                     | 0.00                      |                   |
| 12-May                       | 14                                           | 6.259  | 14.908 | 6.665  | 0.133                                                   | 0.400         | 0.600         | 0.780                 | 0.000                                    | 0.000                     | 0.00                      |                   |
| 13-May                       | 17                                           | 7.600  | 18.103 | 8.093  | 0.162                                                   | 0.486         | 0.728         | 0.000                 | 0.000                                    | 0.000                     | 0.00                      |                   |
| 14-May                       | 14                                           | 6.259  | 14.908 | 6.665  | 0.133                                                   | 0.400         | 0.600         | 0.000                 | 0.000                                    | 0.000                     | 0.00                      |                   |
| 15-May                       | 18                                           | 8.047  | 19.168 | 8.569  | 0.171                                                   | 0.514         | 0.771         | 0.005                 | 0.000                                    | 0.000                     | 0.00                      |                   |
| 16-May                       | 15                                           | 6.706  | 15.973 | 7.141  | 0.143                                                   | 0.428         | 0.643         | 0.000                 | 0.000                                    | 0.000                     | 0.00                      |                   |
| 17-May                       | 13                                           | 5.812  | 13.844 | 6.189  | 0.124                                                   | 0.371         | 0.557         | 0.000                 | 0.000                                    | 0.000                     | 0.00                      |                   |
| 18-May                       | 16                                           | 7.153  | 17.038 | 7.617  | 0.152                                                   | 0.457         | 0.686         | 0.000                 | 0.000                                    | 0.000                     | 0.00                      |                   |
| 19-May                       | 16                                           | 7.153  | 17.038 | 7.617  | 0.152                                                   | 0.457         | 0.686         | 0.005                 | 0.000                                    | 0.000                     | 0.00                      |                   |
| 20-May                       | 16                                           | 7.153  | 17.038 | 7.617  | 0.152                                                   | 0.457         | 0.686         | 0.005                 | 0.000                                    | 0.000                     | 0.00                      |                   |
| 21-May                       | 15                                           | 6.706  | 15.973 | 7.141  | 0.143                                                   | 0.428         | 0.643         | 0.000                 | 0.000                                    | 0.000                     | 0.00                      |                   |
| 22-May                       | 20                                           | 8.941  | 21.298 | 9.521  | 0.190                                                   | 0.571         | 0.857         | 0.000                 | 0.000                                    | 0.000                     | 0.00                      |                   |
| 23-May                       | 20                                           | 8.941  | 21.298 | 9.521  | 0.190                                                   | 0.571         | 0.857         | 0.000                 | 0.000                                    | 0.000                     | 0.00                      |                   |
| 24-May                       | 18                                           | 8.047  | 19.168 | 8.569  | 0.171                                                   | 0.514         | 0.771         | 0.300                 | 0.000                                    | 0.000                     | 0.00                      |                   |
| 25-May                       | 22                                           | 9.835  | 23.428 | 10.473 | 0.209                                                   | 0.628         | 0.943         | 0.550                 | 0.000                                    | 0.000                     | 0.00                      |                   |
| 26-May                       | 17                                           | 7.600  | 18.103 | 8.093  | 0.162                                                   | 0.486         | 0.728         | 0.005                 | 0.000                                    | 0.000                     | 0.00                      |                   |
| 27-May                       | 26                                           | 11.623 | 27.687 | 12.377 | 0.248                                                   | 0.743         | 1.114         | 1.270                 | 0.000                                    | 0.000                     | 0.00                      |                   |
| 28-May                       | 22                                           | 9.835  | 23.428 | 10.473 | 0.209                                                   | 0.628         | 0.943         | 0.050                 | 0.000                                    | 0.000                     | 0.00                      |                   |
| 29-May                       | 21                                           | 9.388  | 22.363 | 9.997  | 0.200                                                   | 0.600         | 0.900         | 0.010                 | 0.000                                    | 0.000                     | 0.00                      |                   |
| 30-May                       | 17                                           | 7.600  | 18.103 | 8.093  | 0.162                                                   | 0.486         | 0.728         | 0.000                 | 0.000                                    | 0.000                     | 0.00                      |                   |
| 31-May                       | 21                                           | 9.388  | 22.363 | 9.997  | 0.200                                                   | 0.600         | 0.900         | 0.450                 | 0.000                                    | 0.000                     | 0.00                      |                   |
| 01-Jun                       | 18                                           | 8.047  | 19.168 | 8.569  | 0.171                                                   | 0.514         | 0.771         | 0.830                 | 0.000                                    | 0.000                     | 0.00                      |                   |
| 02-Jun                       | 14                                           | 6.259  | 14.908 | 6.665  | 0.133                                                   | 0.400         | 0.600         | 0.030                 | 0.000                                    | 0.000                     | 0.00                      |                   |
| 03-Jun                       | 14                                           | 6.259  | 14.908 | 6.665  | 0.133                                                   | 0.400         | 0.600         | 0.000                 | 0.000                                    | 0.000                     | 0.00                      |                   |
| 04-Jun                       | 21                                           | 9.388  | 22.363 | 9.997  | 0.200                                                   | 0.600         | 0.900         | 0.000                 | 0.000                                    | 0.000                     | 0.00                      |                   |
| 05-Jun                       | 22                                           | 9.835  | 23.428 | 10.473 | 0.209                                                   | 0.628         | 0.943         | 0.850                 | 0.000                                    | 0.000                     | 0.00                      |                   |
| 06-Jun                       | 22                                           | 9.835  | 23.428 | 10.473 | 0.209                                                   | 0.628         | 0.943         | 0.060                 | 0.000                                    | 0.000                     | 0.00                      |                   |
| 07-Jun                       | 14                                           | 6.259  | 14.908 | 6.665  | 0.133                                                   | 0.400         | 0.600         | 0.005                 | 0.000                                    | 0.000                     | 0.00                      |                   |
| 08-Jun                       | 17                                           | 7.600  | 18.103 | 8.093  | 0.162                                                   | 0.486         | 0.728         | 0.000                 | 0.000                                    | 0.000                     | 0.00                      |                   |
| 09-Jun                       | 22                                           | 9.835  | 23.428 | 10.473 | 0.209                                                   | 0.628         | 0.943         | 0.010                 | 0.000                                    | 0.000                     | 0.00                      |                   |
| 10-Jun                       | 20                                           | 8.941  | 21.298 | 9.521  | 0.190                                                   | 0.571         | 0.857         | 0.000                 | 0.000                                    | 0.000                     | 0.00                      |                   |
| 11-Jun                       | 17                                           | 7.600  | 18.103 | 8.093  | 0.162                                                   | 0.486         | 0.728         | 0.005                 | 0.000                                    | 0.000                     | 0.00                      |                   |
| 12-Jun                       | 16                                           | 7.153  | 17.038 | 7.617  | 0.152                                                   | 0.457         | 0.686         | 0.320                 | 0.000                                    | 0.000                     | 0.00                      |                   |
| 13-Jun                       | 22                                           | 9.835  | 23.428 | 10.473 | 0.209                                                   | 0.628         | 0.943         | 0.005                 | 0.000                                    | 0.000                     | 0.00                      |                   |
| 14-Jun                       | 22                                           | 9.835  | 23.428 | 10.473 | 0.209                                                   | 0.628         | 0.943         | 0.230                 | 0.000                                    | 0.000                     | 0.00                      |                   |

**FOSTER WHEELER ENVIRONMENTAL CORPORATION**  
**CALCULATION SHEET - EXCEL 5.0**

By: E. Deken, PE  
 Date: 10/23/98  
 Ck'd By: Darrel J. Graziani, P.E.  
 Date: 11/07/98

Cal. No.: 981023ED01  
 Rev. No.: SJRPP 1  
 OFS: 7830.0020.0054

**Project:** JEA St. Johns Power Park

**Subject:** Fugitive Emission Estimates - Wind Erosion Ash Disposal Area

**Assumptions:**

1. The threshold friction velocity was selected based on data available in AP-42, Section 13.2.5.
2. Roughness height was estimated based on largest values listed in AP-42, Section 13.2.5
3. Pile is always at maximum capacity which is maximizing emissions.

**References:**

1. AP-42, Section 13.2.5, Industrial Wind Erosion
2. 1997 Local Climatological Data, NOAA, National Climatic Data Center

**Erosion Potential Calculations**

Threshold Friction Velocity: **1.03**  
 Roughness Height (m) **0.003**

| Number<br>of<br>Disturbances | Fastest Mile Values<br>Anemometer Height (m) |        |        |        | Equivalent Friction Velocities<br>u*=0.1u*<br>(m/s) |             |             | Rain Fall<br>(inches) | Erosion Potential<br>(g/m^2) |                         |                         | Emissions<br>(lb) |
|------------------------------|----------------------------------------------|--------|--------|--------|-----------------------------------------------------|-------------|-------------|-----------------------|------------------------------|-------------------------|-------------------------|-------------------|
|                              | 6.1                                          |        | 10     |        | u_a/u_t:0.2    u_a/u_t:0.6    u_a/u_t:0.9           |             |             |                       | 36% Pile<br>u_a/u_t:0.2      | 50% Pile<br>u_a/u_t:0.6 | 14% Pile<br>u_a/u_t:0.9 |                   |
|                              | (mph)                                        | (m/s)  | (mph)  | (m/s)  | u_a/u_t:0.2                                         | u_a/u_t:0.6 | u_a/u_t:0.9 |                       |                              |                         |                         |                   |
| 15-Jun                       | 23                                           | 10.282 | 24.492 | 10.949 | 0.219                                               | 0.657       | 0.985       | 0.080                 | 0.000                        | 0.000                   | 0.000                   | 0.00              |
| 16-Jun                       | 14                                           | 6.259  | 14.908 | 6.665  | 0.133                                               | 0.400       | 0.600       | 0.000                 | 0.000                        | 0.000                   | 0.000                   | 0.00              |
| 17-Jun                       | 29                                           | 12.964 | 30.882 | 13.805 | 0.276                                               | 0.828       | 1.242       | 0.520                 | 0.000                        | 0.000                   | 0.000                   | 0.00              |
| 18-Jun                       | 26                                           | 11.623 | 27.687 | 12.377 | 0.248                                               | 0.743       | 1.114       | 0.080                 | 0.000                        | 0.000                   | 0.000                   | 0.00              |
| 19-Jun                       | 31                                           | 13.858 | 33.012 | 14.758 | 0.295                                               | 0.885       | 1.328       | 0.520                 | 0.000                        | 0.000                   | 0.000                   | 0.00              |
| 20-Jun                       | 25                                           | 11.176 | 26.622 | 11.901 | 0.238                                               | 0.714       | 1.071       | 0.005                 | 0.000                        | 0.000                   | 1.126                   | 14.05             |
| 21-Jun                       | 17                                           | 7.600  | 18.103 | 8.093  | 0.162                                               | 0.486       | 0.728       | 0.000                 | 0.000                        | 0.000                   | 0.000                   | 0.00              |
| 22-Jun                       | 16                                           | 7.153  | 17.038 | 7.617  | 0.152                                               | 0.457       | 0.686       | 0.000                 | 0.000                        | 0.000                   | 0.000                   | 0.00              |
| 23-Jun                       | 14                                           | 6.259  | 14.908 | 6.665  | 0.133                                               | 0.400       | 0.600       | 0.000                 | 0.000                        | 0.000                   | 0.000                   | 0.00              |
| 24-Jun                       | 17                                           | 7.600  | 18.103 | 8.093  | 0.162                                               | 0.486       | 0.728       | 0.000                 | 0.000                        | 0.000                   | 0.000                   | 0.00              |
| 25-Jun                       | 17                                           | 7.600  | 18.103 | 8.093  | 0.162                                               | 0.486       | 0.728       | 0.030                 | 0.000                        | 0.000                   | 0.000                   | 0.00              |
| 26-Jun                       | 24                                           | 10.729 | 25.557 | 11.425 | 0.229                                               | 0.686       | 1.028       | 0.780                 | 0.000                        | 0.000                   | 0.000                   | 0.00              |
| 27-Jun                       | 33                                           | 14.752 | 35.141 | 15.710 | 0.314                                               | 0.943       | 1.414       | 1.270                 | 0.000                        | 0.000                   | 0.000                   | 0.00              |
| 28-Jun                       | 23                                           | 10.282 | 24.492 | 10.949 | 0.219                                               | 0.657       | 0.985       | 0.010                 | 0.000                        | 0.000                   | 0.000                   | 0.00              |
| 29-Jun                       | 15                                           | 6.706  | 15.973 | 7.141  | 0.143                                               | 0.428       | 0.643       | 0.020                 | 0.000                        | 0.000                   | 0.000                   | 0.00              |
| 30-Jun                       | 20                                           | 8.941  | 21.298 | 9.521  | 0.190                                               | 0.571       | 0.857       | 3.690                 | 0.000                        | 0.000                   | 0.000                   | 0.00              |
| 01-Jul                       | 22                                           | 9.835  | 23.428 | 10.473 | 0.209                                               | 0.628       | 0.943       | 0.040                 | 0.000                        | 0.000                   | 0.000                   | 0.00              |
| 02-Jul                       | 14                                           | 6.259  | 14.908 | 6.665  | 0.133                                               | 0.400       | 0.600       | 0.000                 | 0.000                        | 0.000                   | 0.000                   | 0.00              |
| 03-Jul                       | 13                                           | 5.812  | 13.844 | 6.189  | 0.124                                               | 0.371       | 0.557       | 0.000                 | 0.000                        | 0.000                   | 0.000                   | 0.00              |
| 04-Jul                       | 22                                           | 9.835  | 23.428 | 10.473 | 0.209                                               | 0.628       | 0.943       | 0.150                 | 0.000                        | 0.000                   | 0.000                   | 0.00              |
| 05-Jul                       | 38                                           | 16.988 | 40.466 | 18.090 | 0.362                                               | 1.085       | 1.628       | 0.610                 | 0.000                        | 0.000                   | 0.000                   | 0.00              |
| 06-Jul                       | 29                                           | 12.964 | 30.882 | 13.805 | 0.276                                               | 0.828       | 1.242       | 1.970                 | 0.000                        | 0.000                   | 0.000                   | 0.00              |
| 07-Jul                       | 21                                           | 9.388  | 22.363 | 9.997  | 0.200                                               | 0.600       | 0.900       | 0.700                 | 0.000                        | 0.000                   | 0.000                   | 0.00              |
| 08-Jul                       | 16                                           | 7.153  | 17.038 | 7.617  | 0.152                                               | 0.457       | 0.686       | 0.005                 | 0.000                        | 0.000                   | 0.000                   | 0.00              |
| 09-Jul                       | 16                                           | 7.153  | 17.038 | 7.617  | 0.152                                               | 0.457       | 0.686       | 0.040                 | 0.000                        | 0.000                   | 0.000                   | 0.00              |
| 10-Jul                       | 16                                           | 7.153  | 17.038 | 7.617  | 0.152                                               | 0.457       | 0.686       | 0.000                 | 0.000                        | 0.000                   | 0.000                   | 0.00              |
| 11-Jul                       | 20                                           | 8.941  | 21.298 | 9.521  | 0.190                                               | 0.571       | 0.857       | 0.900                 | 0.000                        | 0.000                   | 0.000                   | 0.00              |
| 12-Jul                       | 16                                           | 7.153  | 17.038 | 7.617  | 0.152                                               | 0.457       | 0.686       | 0.450                 | 0.000                        | 0.000                   | 0.000                   | 0.00              |
| 13-Jul                       | 14                                           | 6.259  | 14.908 | 6.665  | 0.133                                               | 0.400       | 0.600       | 0.000                 | 0.000                        | 0.000                   | 0.000                   | 0.00              |
| 14-Jul                       | 14                                           | 6.259  | 14.908 | 6.665  | 0.133                                               | 0.400       | 0.600       | 0.000                 | 0.000                        | 0.000                   | 0.000                   | 0.00              |
| 15-Jul                       | 15                                           | 6.706  | 15.973 | 7.141  | 0.143                                               | 0.428       | 0.643       | 0.000                 | 0.000                        | 0.000                   | 0.000                   | 0.00              |
| 16-Jul                       | 24                                           | 10.729 | 25.557 | 11.425 | 0.229                                               | 0.686       | 1.028       | 0.005                 | 0.000                        | 0.000                   | 0.000                   | 0.00              |
| 17-Jul                       | 20                                           | 8.941  | 21.298 | 9.521  | 0.190                                               | 0.571       | 0.857       | 0.020                 | 0.000                        | 0.000                   | 0.000                   | 0.00              |
| 18-Jul                       | 28                                           | 12.517 | 29.817 | 13.329 | 0.267                                               | 0.800       | 1.200       | 0.005                 | 0.000                        | 0.000                   | 5.910                   | 73.76             |
| 19-Jul                       | 22                                           | 9.835  | 23.428 | 10.473 | 0.209                                               | 0.628       | 0.943       | 0.005                 | 0.000                        | 0.000                   | 0.000                   | 0.00              |
| 20-Jul                       | 23                                           | 10.282 | 24.492 | 10.949 | 0.219                                               | 0.657       | 0.985       | 0.010                 | 0.000                        | 0.000                   | 0.000                   | 0.00              |
| 21-Jul                       | 16                                           | 7.153  | 17.038 | 7.617  | 0.152                                               | 0.457       | 0.686       | 0.260                 | 0.000                        | 0.000                   | 0.000                   | 0.00              |
| 22-Jul                       | 17                                           | 7.600  | 18.103 | 8.093  | 0.162                                               | 0.486       | 0.728       | 0.000                 | 0.000                        | 0.000                   | 0.000                   | 0.00              |
| 23-Jul                       | 22                                           | 9.835  | 23.428 | 10.473 | 0.209                                               | 0.628       | 0.943       | 0.010                 | 0.000                        | 0.000                   | 0.000                   | 0.00              |
| 24-Jul                       | 14                                           | 6.259  | 14.908 | 6.665  | 0.133                                               | 0.400       | 0.600       | 0.140                 | 0.000                        | 0.000                   | 0.000                   | 0.00              |
| 25-Jul                       | 24                                           | 10.729 | 25.557 | 11.425 | 0.229                                               | 0.686       | 1.028       | 1.060                 | 0.000                        | 0.000                   | 0.000                   | 0.00              |
| 26-Jul                       | 23                                           | 10.282 | 24.492 | 10.949 | 0.219                                               | 0.657       | 0.985       | 0.010                 | 0.000                        | 0.000                   | 0.000                   | 0.00              |
| 27-Jul                       | 18                                           | 8.047  | 19.168 | 8.569  | 0.171                                               | 0.514       | 0.771       | 0.160                 | 0.000                        | 0.000                   | 0.000                   | 0.00              |
| 28-Jul                       | 16                                           | 7.153  | 17.038 | 7.617  | 0.152                                               | 0.457       | 0.686       | 0.000                 | 0.000                        | 0.000                   | 0.000                   | 0.00              |
| 29-Jul                       | 18                                           | 8.047  | 19.168 | 8.569  | 0.171                                               | 0.514       | 0.771       | 0.000                 | 0.000                        | 0.000                   | 0.000                   | 0.00              |
| 30-Jul                       | 16                                           | 7.153  | 17.038 | 7.617  | 0.152                                               | 0.457       | 0.686       | 0.160                 | 0.000                        | 0.000                   | 0.000                   | 0.00              |
| 31-Jul                       | 16                                           | 7.153  | 17.038 | 7.617  | 0.152                                               | 0.457       | 0.686       | 1.000                 | 0.000                        | 0.000                   | 0.000                   | 0.00              |
| 01-Aug                       | 21                                           | 9.388  | 22.363 | 9.997  | 0.200                                               | 0.600       | 0.900       | 3.730                 | 0.000                        | 0.000                   | 0.000                   | 0.00              |
| 02-Aug                       | 20                                           | 8.941  | 21.298 | 9.521  | 0.190                                               | 0.571       | 0.857       | 0.500                 | 0.000                        | 0.000                   | 0.000                   | 0.00              |
| 03-Aug                       | 24                                           | 10.729 | 25.557 | 11.425 | 0.229                                               | 0.686       | 1.028       | 0.160                 | 0.000                        | 0.000                   | 0.000                   | 0.00              |
| 04-Aug                       | 16                                           | 7.153  | 17.038 | 7.617  | 0.152                                               | 0.457       | 0.686       | 0.000                 | 0.000                        | 0.000                   | 0.000                   | 0.00              |
| 05-Aug                       | 13                                           | 5.812  | 13.844 | 6.189  | 0.124                                               | 0.371       | 0.557       | 0.000                 | 0.000                        | 0.000                   | 0.000                   | 0.00              |
| 06-Aug                       | 21                                           | 9.388  | 22.363 | 9.997  | 0.200                                               | 0.600       | 0.900       | 0.010                 | 0.000                        | 0.000                   | 0.000                   | 0.00              |
| 07-Aug                       | 18                                           | 8.047  | 19.168 | 8.569  | 0.171                                               | 0.514       | 0.771       | 0.010                 | 0.000                        | 0.000                   | 0.000                   | 0.00              |
| 08-Aug                       | 20                                           | 8.941  | 21.298 | 9.521  | 0.190                                               | 0.571       | 0.857       | 0.060                 | 0.000                        | 0.000                   | 0.000                   | 0.00              |

**FOSTER WHEELER ENVIRONMENTAL CORPORATION**  
**CALCULATION SHEET - EXCEL 5.0**

**By: E. Deken, PE**  
**Date:** 10/23/98  
**Ch'd By:** Darrel J. Grazlani, P.E.  
**Date:** 11/07/98

**Cal. No.:** 981023ED01  
**Rev. No.:** SJRPP 1  
**OFS:** 7830.0020.0054

**Project:** JEA St. Johns Power Park

**Subject:** Fugitive Emission Estimates - Wind Erosion Ash Disposal Area

**Assumptions:**

1. The threshold friction velocity was selected based on data available in AP-42, Section 13.2.5.
2. Roughness height was estimated based on largest values listed in AP-42, Section 13.2.5
3. Pile is always at maximum capacity which is maximizing emissions.

**References:**

1. AP-42, Section 13.2.5, Industrial Wind Erosion
2. 1997 Local Climatological Data, NOAA, National Climatic Data Center

**Erosion Potential Calculations**

Threshold Friction Velocity: **1.03**

Roughness Height (m) **0.003**

| Number<br>of<br>Disturbances | Fastest Mile Values   |             |             |             | Equivalent Friction Velocities |               |               | Rain Fall<br>(inches) | Erosion Potential         |                           |                           | Emissions<br>(lb) |
|------------------------------|-----------------------|-------------|-------------|-------------|--------------------------------|---------------|---------------|-----------------------|---------------------------|---------------------------|---------------------------|-------------------|
|                              | Anemometer Height (m) |             |             |             | $u^*=0.1u^*$<br>(m/s)          |               |               |                       | (g/m^2)                   |                           |                           |                   |
|                              | 6:1<br>(mph)          | 10<br>(m/s) | 10<br>(mph) | 10<br>(m/s) | $u_a/u_t:0.2$                  | $u_a/u_t:0.6$ | $u_a/u_t:0.9$ |                       | 36% Pile<br>$u_a/u_t:0.2$ | 50% Pile<br>$u_a/u_t:0.6$ | 14% Pile<br>$u_a/u_t:0.9$ |                   |
| 09-Aug                       | 17                    | 7.600       | 18.103      | 8.093       | 0.162                          | 0.486         | 0.728         | 0.020                 | 0.000                     | 0.000                     | 0.000                     | 0.00              |
| 10-Aug                       | 17                    | 7.600       | 18.103      | 8.093       | 0.162                          | 0.486         | 0.728         | 0.220                 | 0.000                     | 0.000                     | 0.000                     | 0.00              |
| 11-Aug                       | 15                    | 6.706       | 15.973      | 7.141       | 0.143                          | 0.428         | 0.643         | 0.005                 | 0.000                     | 0.000                     | 0.000                     | 0.00              |
| 12-Aug                       | 15                    | 6.706       | 15.973      | 7.141       | 0.143                          | 0.428         | 0.643         | 0.000                 | 0.000                     | 0.000                     | 0.000                     | 0.00              |
| 13-Aug                       | 15                    | 6.706       | 15.973      | 7.141       | 0.143                          | 0.428         | 0.643         | 0.450                 | 0.000                     | 0.000                     | 0.000                     | 0.00              |
| 14-Aug                       | 13                    | 5.812       | 13.844      | 6.189       | 0.124                          | 0.371         | 0.557         | 0.010                 | 0.000                     | 0.000                     | 0.000                     | 0.00              |
| 15-Aug                       | 23                    | 10.282      | 24.492      | 10.949      | 0.219                          | 0.657         | 0.985         | 0.005                 | 0.000                     | 0.000                     | 0.000                     | 0.00              |
| 16-Aug                       | 30                    | 13.411      | 31.947      | 14.281      | 0.286                          | 0.857         | 1.285         | 0.710                 | 0.000                     | 0.000                     | 0.000                     | 0.00              |
| 17-Aug                       | 14                    | 6.259       | 14.908      | 6.665       | 0.133                          | 0.400         | 0.600         | 0.000                 | 0.000                     | 0.000                     | 0.000                     | 0.00              |
| 18-Aug                       | 26                    | 11.623      | 27.687      | 12.377      | 0.248                          | 0.743         | 1.114         | 0.270                 | 0.000                     | 0.000                     | 0.000                     | 0.00              |
| 19-Aug                       | 16                    | 7.153       | 17.038      | 7.617       | 0.152                          | 0.457         | 0.686         | 0.240                 | 0.000                     | 0.000                     | 0.000                     | 0.00              |
| 20-Aug                       | 17                    | 7.600       | 18.103      | 8.093       | 0.162                          | 0.486         | 0.728         | 0.000                 | 0.000                     | 0.000                     | 0.000                     | 0.00              |
| 21-Aug                       | 21                    | 9.388       | 22.363      | 9.997       | 0.200                          | 0.600         | 0.900         | 0.160                 | 0.000                     | 0.000                     | 0.000                     | 0.00              |
| 22-Aug                       | 15                    | 6.706       | 15.973      | 7.141       | 0.143                          | 0.428         | 0.643         | 0.000                 | 0.000                     | 0.000                     | 0.000                     | 0.00              |
| 23-Aug                       | 21                    | 9.388       | 22.363      | 9.997       | 0.200                          | 0.600         | 0.900         | 0.020                 | 0.000                     | 0.000                     | 0.000                     | 0.00              |
| 24-Aug                       | 29                    | 12.964      | 30.882      | 13.805      | 0.276                          | 0.828         | 1.242         | 1.590                 | 0.000                     | 0.000                     | 0.000                     | 0.00              |
| 25-Aug                       | 18                    | 8.047       | 19.168      | 8.569       | 0.171                          | 0.514         | 0.771         | 0.000                 | 0.000                     | 0.000                     | 0.000                     | 0.00              |
| 26-Aug                       | 20                    | 8.941       | 21.298      | 9.521       | 0.190                          | 0.571         | 0.857         | 0.000                 | 0.000                     | 0.000                     | 0.000                     | 0.00              |
| 27-Aug                       | 11                    | 4.917       | 11.714      | 5.237       | 0.105                          | 0.314         | 0.471         | 0.000                 | 0.000                     | 0.000                     | 0.000                     | 0.00              |
| 28-Aug                       | 16                    | 7.153       | 17.038      | 7.617       | 0.152                          | 0.457         | 0.686         | 0.000                 | 0.000                     | 0.000                     | 0.000                     | 0.00              |
| 29-Aug                       | 17                    | 7.600       | 18.103      | 8.093       | 0.162                          | 0.486         | 0.728         | 0.000                 | 0.000                     | 0.000                     | 0.000                     | 0.00              |
| 30-Aug                       | 21                    | 9.388       | 22.363      | 9.997       | 0.200                          | 0.600         | 0.900         | 0.080                 | 0.000                     | 0.000                     | 0.000                     | 0.00              |
| 31-Aug                       | 16                    | 7.153       | 17.038      | 7.617       | 0.152                          | 0.457         | 0.686         | 0.000                 | 0.000                     | 0.000                     | 0.000                     | 0.00              |
| 01-Sep                       | 21                    | 9.388       | 22.363      | 9.997       | 0.200                          | 0.600         | 0.900         | 0.005                 | 0.000                     | 0.000                     | 0.000                     | 0.00              |
| 02-Sep                       | 16                    | 7.153       | 17.038      | 7.617       | 0.152                          | 0.457         | 0.686         | 0.130                 | 0.000                     | 0.000                     | 0.000                     | 0.00              |
| 03-Sep                       | 11                    | 4.917       | 11.714      | 5.237       | 0.105                          | 0.314         | 0.471         | 0.000                 | 0.000                     | 0.000                     | 0.000                     | 0.00              |
| 04-Sep                       | 26                    | 11.623      | 27.687      | 12.377      | 0.248                          | 0.743         | 1.114         | 0.005                 | 0.000                     | 0.000                     | 2.508                     | 31.29             |
| 05-Sep                       | 21                    | 9.388       | 22.363      | 9.997       | 0.200                          | 0.600         | 0.900         | 0.000                 | 0.000                     | 0.000                     | 0.000                     | 0.00              |
| 06-Sep                       | 18                    | 8.047       | 19.168      | 8.569       | 0.171                          | 0.514         | 0.771         | 0.000                 | 0.000                     | 0.000                     | 0.000                     | 0.00              |
| 07-Sep                       | 16                    | 7.153       | 17.038      | 7.617       | 0.152                          | 0.457         | 0.686         | 0.000                 | 0.000                     | 0.000                     | 0.000                     | 0.00              |
| 08-Sep                       | 14                    | 6.259       | 14.908      | 6.665       | 0.133                          | 0.400         | 0.600         | 0.000                 | 0.000                     | 0.000                     | 0.000                     | 0.00              |
| 09-Sep                       | 14                    | 6.259       | 14.908      | 6.665       | 0.133                          | 0.400         | 0.600         | 0.000                 | 0.000                     | 0.000                     | 0.000                     | 0.00              |
| 10-Sep                       | 17                    | 7.600       | 18.103      | 8.093       | 0.162                          | 0.486         | 0.728         | 0.005                 | 0.000                     | 0.000                     | 0.000                     | 0.00              |
| 11-Sep                       | 15                    | 6.706       | 15.973      | 7.141       | 0.143                          | 0.428         | 0.643         | 0.000                 | 0.000                     | 0.000                     | 0.000                     | 0.00              |
| 12-Sep                       | 14                    | 6.259       | 14.908      | 6.665       | 0.133                          | 0.400         | 0.600         | 0.000                 | 0.000                     | 0.000                     | 0.000                     | 0.00              |
| 13-Sep                       | 14                    | 6.259       | 14.908      | 6.665       | 0.133                          | 0.400         | 0.600         | 0.000                 | 0.000                     | 0.000                     | 0.000                     | 0.00              |
| 14-Sep                       | 20                    | 8.941       | 21.298      | 9.521       | 0.190                          | 0.571         | 0.857         | 0.030                 | 0.000                     | 0.000                     | 0.000                     | 0.00              |
| 15-Sep                       | 14                    | 6.259       | 14.908      | 6.665       | 0.133                          | 0.400         | 0.600         | 0.000                 | 0.000                     | 0.000                     | 0.000                     | 0.00              |
| 16-Sep                       | 14                    | 6.259       | 14.908      | 6.665       | 0.133                          | 0.400         | 0.600         | 0.000                 | 0.000                     | 0.000                     | 0.000                     | 0.00              |
| 17-Sep                       | 16                    | 7.153       | 17.038      | 7.617       | 0.152                          | 0.457         | 0.686         | 0.000                 | 0.000                     | 0.000                     | 0.000                     | 0.00              |
| 18-Sep                       | 11                    | 4.917       | 11.714      | 5.237       | 0.105                          | 0.314         | 0.471         | 0.000                 | 0.000                     | 0.000                     | 0.000                     | 0.00              |
| 19-Sep                       | 14                    | 6.259       | 14.908      | 6.665       | 0.133                          | 0.400         | 0.600         | 0.000                 | 0.000                     | 0.000                     | 0.000                     | 0.00              |
| 20-Sep                       | 11                    | 4.917       | 11.714      | 5.237       | 0.105                          | 0.314         | 0.471         | 0.000                 | 0.000                     | 0.000                     | 0.000                     | 0.00              |
| 21-Sep                       | 16                    | 7.153       | 17.038      | 7.617       | 0.152                          | 0.457         | 0.686         | 0.000                 | 0.000                     | 0.000                     | 0.000                     | 0.00              |
| 22-Sep                       | 17                    | 7.600       | 18.103      | 8.093       | 0.162                          | 0.486         | 0.728         | 0.000                 | 0.000                     | 0.000                     | 0.000                     | 0.00              |
| 23-Sep                       | 20                    | 8.941       | 21.298      | 9.521       | 0.190                          | 0.571         | 0.857         | 0.180                 | 0.000                     | 0.000                     | 0.000                     | 0.00              |
| 24-Sep                       | 14                    | 6.259       | 14.908      | 6.665       | 0.133                          | 0.400         | 0.600         | 1.000                 | 0.000                     | 0.000                     | 0.000                     | 0.00              |
| 25-Sep                       | 23                    | 10.282      | 24.492      | 10.949      | 0.219                          | 0.657         | 0.985         | 0.280                 | 0.000                     | 0.000                     | 0.000                     | 0.00              |
| 26-Sep                       | 16                    | 7.153       | 17.038      | 7.617       | 0.152                          | 0.457         | 0.686         | 1.080                 | 0.000                     | 0.000                     | 0.000                     | 0.00              |
| 27-Sep                       | 7                     | 3.129       | 7.454       | 3.332       | 0.067                          | 0.200         | 0.300         | 2.250                 | 0.000                     | 0.000                     | 0.000                     | 0.00              |
| 28-Sep                       | 15                    | 6.706       | 15.973      | 7.141       | 0.143                          | 0.428         | 0.643         | 0.010                 | 0.000                     | 0.000                     | 0.000                     | 0.00              |
| 29-Sep                       | 16                    | 7.153       | 17.038      | 7.617       | 0.152                          | 0.457         | 0.686         | 0.000                 | 0.000                     | 0.000                     | 0.000                     | 0.00              |
| 30-Sep                       | 17                    | 7.600       | 18.103      | 8.093       | 0.162                          | 0.486         | 0.728         | 0.000                 | 0.000                     | 0.000                     | 0.000                     | 0.00              |
| 01-Oct                       | 17                    | 7.600       | 18.103      | 8.093       | 0.162                          | 0.486         | 0.728         | 0.000                 | 0.000                     | 0.000                     | 0.000                     | 0.00              |
| 02-Oct                       | 23                    | 10.282      | 24.492      | 10.949      | 0.219                          | 0.657         | 0.985         | 0.000                 | 0.000                     | 0.000                     | 0.000                     | 0.00              |

**FOSTER WHEELER ENVIRONMENTAL CORPORATION**  
**CALCULATION SHEET - EXCEL 5.0**

**By: E. Deken, PE**  
**Date: 10/23/98**  
**Ch'd By: Darrel J. Graziani, P.E.**  
**Date: 11/07/98**

**Cal. No.: 981023ED01**  
**Rev. No.: SJRPP 1**  
**OFS: 7830.0020.0054**

**Project: JEA St. Johns Power Park**

**Subject: Fugitive Emission Estimates - Wind Erosion Ash Disposal Area**

**Assumptions:**

1. The threshold friction velocity was selected based on data available in AP-42, Section 13.2.5.
2. Roughness height was estimated based on largest values listed in AP-42, Section 13.2.5
3. Pile is always at maximum capacity which is maximizing emissions.

**References:**

1. AP-42, Section 13.2.5, Industrial Wind Erosion
2. 1997 Local Climatological Data, NOAA, National Climatic Data Center

**Erosion Potential Calculations**

Threshold Friction Velocity: **1.03**  
 Roughness Height (m) **0.003**

| Number<br>of<br>Disturbances | Fastest Mile Values<br>Anemometer Height (m) |        |        |        | Equivalent Friction Velocities<br>u* = 0.1u* |                                     |                                                 | Rain Fall<br>(inches) | Erosion Potential<br>(g/m²)                     |                                                 |                                     | Emissions<br>(lb) |
|------------------------------|----------------------------------------------|--------|--------|--------|----------------------------------------------|-------------------------------------|-------------------------------------------------|-----------------------|-------------------------------------------------|-------------------------------------------------|-------------------------------------|-------------------|
|                              | 6.1                                          |        | 10     |        | (m/s)                                        |                                     | 36% Pile<br>u <sub>a</sub> /u <sub>*</sub> :0.2 |                       | 50% Pile<br>u <sub>a</sub> /u <sub>*</sub> :0.6 | 14% Pile<br>u <sub>a</sub> /u <sub>*</sub> :0.9 |                                     |                   |
|                              | (mph)                                        | (m/s)  | (mph)  | (m/s)  | u <sub>a</sub> /u <sub>*</sub> :0.2          | u <sub>a</sub> /u <sub>*</sub> :0.6 |                                                 |                       |                                                 |                                                 | u <sub>a</sub> /u <sub>*</sub> :0.9 |                   |
| 03-Oct                       | 17                                           | 7.600  | 18.103 | 8.093  | 0.162                                        | 0.486                               | 0.728                                           | 0.005                 | 0.000                                           | 0.000                                           | 0.000                               | 0.00              |
| 04-Oct                       | 21                                           | 9.388  | 22.363 | 9.997  | 0.200                                        | 0.600                               | 0.900                                           | 0.005                 | 0.000                                           | 0.000                                           | 0.000                               | 0.00              |
| 05-Oct                       | 20                                           | 8.941  | 21.298 | 9.521  | 0.190                                        | 0.571                               | 0.857                                           | 0.000                 | 0.000                                           | 0.000                                           | 0.000                               | 0.00              |
| 06-Oct                       | 15                                           | 6.706  | 15.973 | 7.141  | 0.143                                        | 0.428                               | 0.643                                           | 0.000                 | 0.000                                           | 0.000                                           | 0.000                               | 0.00              |
| 07-Oct                       | 18                                           | 8.047  | 19.168 | 8.569  | 0.171                                        | 0.514                               | 0.771                                           | 0.000                 | 0.000                                           | 0.000                                           | 0.000                               | 0.00              |
| 08-Oct                       | 21                                           | 9.388  | 22.363 | 9.997  | 0.200                                        | 0.600                               | 0.900                                           | 0.005                 | 0.000                                           | 0.000                                           | 0.000                               | 0.00              |
| 09-Oct                       | 23                                           | 10.282 | 24.492 | 10.949 | 0.219                                        | 0.657                               | 0.985                                           | 0.170                 | 0.000                                           | 0.000                                           | 0.000                               | 0.00              |
| 10-Oct                       | 21                                           | 9.388  | 22.363 | 9.997  | 0.200                                        | 0.600                               | 0.900                                           | 0.000                 | 0.000                                           | 0.000                                           | 0.000                               | 0.00              |
| 11-Oct                       | 20                                           | 8.941  | 21.298 | 9.521  | 0.190                                        | 0.571                               | 0.857                                           | 0.090                 | 0.000                                           | 0.000                                           | 0.000                               | 0.00              |
| 12-Oct                       | 20                                           | 8.941  | 21.298 | 9.521  | 0.190                                        | 0.571                               | 0.857                                           | 0.050                 | 0.000                                           | 0.000                                           | 0.000                               | 0.00              |
| 13-Oct                       | 15                                           | 6.706  | 15.973 | 7.141  | 0.143                                        | 0.428                               | 0.643                                           | 0.005                 | 0.000                                           | 0.000                                           | 0.000                               | 0.00              |
| 14-Oct                       | 13                                           | 5.812  | 13.844 | 6.189  | 0.124                                        | 0.371                               | 0.557                                           | 0.000                 | 0.000                                           | 0.000                                           | 0.000                               | 0.00              |
| 15-Oct                       | 15                                           | 6.706  | 15.973 | 7.141  | 0.143                                        | 0.428                               | 0.643                                           | 0.240                 | 0.000                                           | 0.000                                           | 0.000                               | 0.00              |
| 16-Oct                       | 16                                           | 7.153  | 17.038 | 7.617  | 0.152                                        | 0.457                               | 0.686                                           | 0.050                 | 0.000                                           | 0.000                                           | 0.000                               | 0.00              |
| 17-Oct                       | 11                                           | 4.917  | 11.714 | 5.237  | 0.105                                        | 0.314                               | 0.471                                           | 0.000                 | 0.000                                           | 0.000                                           | 0.000                               | 0.00              |
| 18-Oct                       | 14                                           | 6.259  | 14.908 | 6.665  | 0.133                                        | 0.400                               | 0.600                                           | 0.050                 | 0.000                                           | 0.000                                           | 0.000                               | 0.00              |
| 19-Oct                       | 20                                           | 8.941  | 21.298 | 9.521  | 0.190                                        | 0.571                               | 0.857                                           | 0.000                 | 0.000                                           | 0.000                                           | 0.000                               | 0.00              |
| 20-Oct                       | 15                                           | 6.706  | 15.973 | 7.141  | 0.143                                        | 0.428                               | 0.643                                           | 0.000                 | 0.000                                           | 0.000                                           | 0.000                               | 0.00              |
| 21-Oct                       | 10                                           | 4.470  | 10.649 | 4.760  | 0.095                                        | 0.286                               | 0.428                                           | 0.000                 | 0.000                                           | 0.000                                           | 0.000                               | 0.00              |
| 22-Oct                       | 14                                           | 6.259  | 14.908 | 6.665  | 0.133                                        | 0.400                               | 0.600                                           | 0.000                 | 0.000                                           | 0.000                                           | 0.000                               | 0.00              |
| 23-Oct                       | 14                                           | 6.259  | 14.908 | 6.665  | 0.133                                        | 0.400                               | 0.600                                           | 0.000                 | 0.000                                           | 0.000                                           | 0.000                               | 0.00              |
| 24-Oct                       | 20                                           | 8.941  | 21.298 | 9.521  | 0.190                                        | 0.571                               | 0.857                                           | 0.290                 | 0.000                                           | 0.000                                           | 0.000                               | 0.00              |
| 25-Oct                       | 11                                           | 4.917  | 11.714 | 5.237  | 0.105                                        | 0.314                               | 0.471                                           | 0.000                 | 0.000                                           | 0.000                                           | 0.000                               | 0.00              |
| 26-Oct                       | 22                                           | 9.835  | 23.428 | 10.473 | 0.209                                        | 0.628                               | 0.943                                           | 0.580                 | 0.000                                           | 0.000                                           | 0.000                               | 0.00              |
| 27-Oct                       | 22                                           | 9.835  | 23.428 | 10.473 | 0.209                                        | 0.628                               | 0.943                                           | 2.640                 | 0.000                                           | 0.000                                           | 0.000                               | 0.00              |
| 28-Oct                       | 14                                           | 6.259  | 14.908 | 6.665  | 0.133                                        | 0.400                               | 0.600                                           | 0.000                 | 0.000                                           | 0.000                                           | 0.000                               | 0.00              |
| 29-Oct                       | 10                                           | 4.470  | 10.649 | 4.760  | 0.095                                        | 0.286                               | 0.428                                           | 0.000                 | 0.000                                           | 0.000                                           | 0.000                               | 0.00              |
| 30-Oct                       | 13                                           | 5.812  | 13.844 | 6.189  | 0.124                                        | 0.371                               | 0.557                                           | 0.000                 | 0.000                                           | 0.000                                           | 0.000                               | 0.00              |
| 31-Oct                       | 13                                           | 5.812  | 13.844 | 6.189  | 0.124                                        | 0.371                               | 0.557                                           | 0.680                 | 0.000                                           | 0.000                                           | 0.000                               | 0.00              |
| 01-Nov                       | 16                                           | 7.153  | 17.038 | 7.617  | 0.152                                        | 0.457                               | 0.686                                           | 0.000                 | 0.000                                           | 0.000                                           | 0.000                               | 0.00              |
| 02-Nov                       | 21                                           | 9.388  | 22.363 | 9.997  | 0.200                                        | 0.600                               | 0.900                                           | 0.180                 | 0.000                                           | 0.000                                           | 0.000                               | 0.00              |
| 03-Nov                       | 21                                           | 9.388  | 22.363 | 9.997  | 0.200                                        | 0.600                               | 0.900                                           | 0.000                 | 0.000                                           | 0.000                                           | 0.000                               | 0.00              |
| 04-Nov                       | 14                                           | 6.259  | 14.908 | 6.665  | 0.133                                        | 0.400                               | 0.600                                           | 0.000                 | 0.000                                           | 0.000                                           | 0.000                               | 0.00              |
| 05-Nov                       | 17                                           | 7.600  | 18.103 | 8.093  | 0.162                                        | 0.486                               | 0.728                                           | 0.000                 | 0.000                                           | 0.000                                           | 0.000                               | 0.00              |
| 06-Nov                       | 11                                           | 4.917  | 11.714 | 5.237  | 0.105                                        | 0.314                               | 0.471                                           | 0.005                 | 0.000                                           | 0.000                                           | 0.000                               | 0.00              |
| 07-Nov                       | 17                                           | 7.600  | 18.103 | 8.093  | 0.162                                        | 0.486                               | 0.728                                           | 0.150                 | 0.000                                           | 0.000                                           | 0.000                               | 0.00              |
| 08-Nov                       | 18                                           | 8.047  | 19.168 | 8.569  | 0.171                                        | 0.514                               | 0.771                                           | 0.000                 | 0.000                                           | 0.000                                           | 0.000                               | 0.00              |
| 09-Nov                       | 15                                           | 6.706  | 15.973 | 7.141  | 0.143                                        | 0.428                               | 0.643                                           | 0.000                 | 0.000                                           | 0.000                                           | 0.000                               | 0.00              |
| 10-Nov                       | 16                                           | 7.153  | 17.038 | 7.617  | 0.152                                        | 0.457                               | 0.686                                           | 0.000                 | 0.000                                           | 0.000                                           | 0.000                               | 0.00              |
| 11-Nov                       | 13                                           | 5.812  | 13.844 | 6.189  | 0.124                                        | 0.371                               | 0.557                                           | 0.000                 | 0.000                                           | 0.000                                           | 0.000                               | 0.00              |
| 12-Nov                       | 15                                           | 6.706  | 15.973 | 7.141  | 0.143                                        | 0.428                               | 0.643                                           | 0.280                 | 0.000                                           | 0.000                                           | 0.000                               | 0.00              |
| 13-Nov                       | 16                                           | 7.153  | 17.038 | 7.617  | 0.152                                        | 0.457                               | 0.686                                           | 0.650                 | 0.000                                           | 0.000                                           | 0.000                               | 0.00              |
| 14-Nov                       | 28                                           | 12.517 | 29.817 | 13.329 | 0.267                                        | 0.800                               | 1.200                                           | 0.000                 | 0.000                                           | 0.000                                           | 5.910                               | 73.76             |
| 15-Nov                       | 13                                           | 5.812  | 13.844 | 6.189  | 0.124                                        | 0.371                               | 0.557                                           | 0.000                 | 0.000                                           | 0.000                                           | 0.000                               | 0.00              |
| 16-Nov                       | 14                                           | 6.259  | 14.908 | 6.665  | 0.133                                        | 0.400                               | 0.600                                           | 0.005                 | 0.000                                           | 0.000                                           | 0.000                               | 0.00              |
| 17-Nov                       | 15                                           | 6.706  | 15.973 | 7.141  | 0.143                                        | 0.428                               | 0.643                                           | 0.000                 | 0.000                                           | 0.000                                           | 0.000                               | 0.00              |
| 18-Nov                       | 13                                           | 5.812  | 13.844 | 6.189  | 0.124                                        | 0.371                               | 0.557                                           | 0.000                 | 0.000                                           | 0.000                                           | 0.000                               | 0.00              |
| 19-Nov                       | 8                                            | 3.576  | 8.519  | 3.808  | 0.076                                        | 0.229                               | 0.343                                           | 0.005                 | 0.000                                           | 0.000                                           | 0.000                               | 0.00              |
| 20-Nov                       | 14                                           | 6.259  | 14.908 | 6.665  | 0.133                                        | 0.400                               | 0.600                                           | 0.000                 | 0.000                                           | 0.000                                           | 0.000                               | 0.00              |
| 21-Nov                       | 14                                           | 6.259  | 14.908 | 6.665  | 0.133                                        | 0.400                               | 0.600                                           | 0.000                 | 0.000                                           | 0.000                                           | 0.000                               | 0.00              |
| 22-Nov                       | 14                                           | 6.259  | 14.908 | 6.665  | 0.133                                        | 0.400                               | 0.600                                           | 0.000                 | 0.000                                           | 0.000                                           | 0.000                               | 0.00              |
| 23-Nov                       | 13                                           | 5.812  | 13.844 | 6.189  | 0.124                                        | 0.371                               | 0.557                                           | 0.005                 | 0.000                                           | 0.000                                           | 0.000                               | 0.00              |
| 24-Nov                       | 15                                           | 6.706  | 15.973 | 7.141  | 0.143                                        | 0.428                               | 0.643                                           | 0.000                 | 0.000                                           | 0.000                                           | 0.000                               | 0.00              |
| 25-Nov                       | 18                                           | 8.047  | 19.168 | 8.569  | 0.171                                        | 0.514                               | 0.771                                           | 0.000                 | 0.000                                           | 0.000                                           | 0.000                               | 0.00              |
| 26-Nov                       | 14                                           | 6.259  | 14.908 | 6.665  | 0.133                                        | 0.400                               | 0.600                                           | 0.000                 | 0.000                                           | 0.000                                           | 0.000                               | 0.00              |



**FOSTER WHEELER ENVIRONMENTAL CORPORATION**  
**CALCULATION SHEET - EXCEL 5.0**

**By: E. Deken, PE**

**Date: 10/23/98**

**Ch'd By: Darrel J. Graziani, P.E.**

**Date: 11/07/98**

**Cal. No.: 981023ED01**

**Rev. No.: SJRPP 1**

**OFS: 7830.0020.0054**

**Project: JEA St. Johns Power Park**

**Subject: Fugitive Emission Estimates - Wind Erosion Ash Disposal Area**

**Assumptions:**

1. The threshold friction velocity was selected based on data available in AP-42, Section 13.2.5.
2. Roughness height was estimated based on largest values listed in AP-42, Section 13.2.5
3. Pile is always at maximum capacity which is maximizing emissions.

**References:**

1. AP-42, Section 13.2.5, Industrial Wind Erosion
2. 1997 Local Climatological Data, NOAA, National Climatic Data Center

**Erosion Potential Calculations**

Threshold Friction Velocity: **1.03**

Roughness Height (m) **0.003**

| Number of Disturbances | Fastest Mile Values<br>Anemometer Height (m) |        |        |        | Equivalent Friction Velocities<br>$u^*=0.1u^*$ |                |                | Rain Fall<br>(inches) | Erosion Potential<br>(g/m <sup>2</sup> ) |                |                | Emissions<br>(lb) |
|------------------------|----------------------------------------------|--------|--------|--------|------------------------------------------------|----------------|----------------|-----------------------|------------------------------------------|----------------|----------------|-------------------|
|                        | 6.1                                          |        | 10     |        | $(m/s)$                                        |                |                |                       | 36% Pile                                 | 50% Pile       | 14% Pile       |                   |
|                        | (mph)                                        | (m/s)  | (mph)  | (m/s)  | $u_s/u_{*0.2}$                                 | $u_s/u_{*0.6}$ | $u_s/u_{*0.9}$ |                       | $u_s/u_{*0.2}$                           | $u_s/u_{*0.6}$ | $u_s/u_{*0.9}$ |                   |
| 27-Nov                 | 15                                           | 6.706  | 15.973 | 7.141  | 0.143                                          | 0.428          | 0.643          | 0.000                 | 0.000                                    | 0.000          | 0.000          | 0.00              |
| 28-Nov                 | 9                                            | 4.023  | 9.584  | 4.284  | 0.086                                          | 0.257          | 0.386          | 0.005                 | 0.000                                    | 0.000          | 0.000          | 0.00              |
| 29-Nov                 | 25                                           | 11.176 | 26.622 | 11.901 | 0.238                                          | 0.714          | 1.071          | 1.130                 | 0.000                                    | 0.000          | 0.000          | 0.00              |
| 30-Nov                 | 21                                           | 9.388  | 22.363 | 9.997  | 0.200                                          | 0.600          | 0.900          | 0.020                 | 0.000                                    | 0.000          | 0.000          | 0.00              |
| 01-Dec                 | 20                                           | 8.941  | 21.298 | 9.521  | 0.190                                          | 0.571          | 0.857          | 0.000                 | 0.000                                    | 0.000          | 0.000          | 0.00              |
| 02-Dec                 | 16                                           | 7.153  | 17.038 | 7.617  | 0.152                                          | 0.457          | 0.686          | 0.000                 | 0.000                                    | 0.000          | 0.000          | 0.00              |
| 03-Dec                 | 15                                           | 6.706  | 15.973 | 7.141  | 0.143                                          | 0.428          | 0.643          | 0.100                 | 0.000                                    | 0.000          | 0.000          | 0.00              |
| 04-Dec                 | 21                                           | 9.388  | 22.363 | 9.997  | 0.200                                          | 0.600          | 0.900          | 0.100                 | 0.000                                    | 0.000          | 0.000          | 0.00              |
| 05-Dec                 | 20                                           | 8.941  | 21.298 | 9.521  | 0.190                                          | 0.571          | 0.857          | 0.000                 | 0.000                                    | 0.000          | 0.000          | 0.00              |
| 06-Dec                 | 20                                           | 8.941  | 21.298 | 9.521  | 0.190                                          | 0.571          | 0.857          | 0.000                 | 0.000                                    | 0.000          | 0.000          | 0.00              |
| 07-Dec                 | 11                                           | 4.917  | 11.714 | 5.237  | 0.105                                          | 0.314          | 0.471          | 0.000                 | 0.000                                    | 0.000          | 0.000          | 0.00              |
| 08-Dec                 | 14                                           | 6.259  | 14.908 | 6.665  | 0.133                                          | 0.400          | 0.600          | 0.060                 | 0.000                                    | 0.000          | 0.000          | 0.00              |
| 09-Dec                 | 11                                           | 4.917  | 11.714 | 5.237  | 0.105                                          | 0.314          | 0.471          | 0.110                 | 0.000                                    | 0.000          | 0.000          | 0.00              |
| 10-Dec                 | 37                                           | 16.540 | 39.401 | 17.614 | 0.352                                          | 1.057          | 1.585          | 2.860                 | 0.000                                    | 0.000          | 0.000          | 0.00              |
| 11-Dec                 | 15                                           | 6.706  | 15.973 | 7.141  | 0.143                                          | 0.428          | 0.643          | 0.005                 | 0.000                                    | 0.000          | 0.000          | 0.00              |
| 12-Dec                 | 21                                           | 9.388  | 22.363 | 9.997  | 0.200                                          | 0.600          | 0.900          | 2.720                 | 0.000                                    | 0.000          | 0.000          | 0.00              |
| 13-Dec                 | 13                                           | 5.812  | 13.844 | 6.189  | 0.124                                          | 0.371          | 0.557          | 0.300                 | 0.000                                    | 0.000          | 0.000          | 0.00              |
| 14-Dec                 | 20                                           | 8.941  | 21.298 | 9.521  | 0.190                                          | 0.571          | 0.857          | 1.370                 | 0.000                                    | 0.000          | 0.000          | 0.00              |
| 15-Dec                 | 26                                           | 11.623 | 27.687 | 12.377 | 0.248                                          | 0.743          | 1.114          | 1.590                 | 0.000                                    | 0.000          | 0.000          | 0.00              |
| 16-Dec                 | 17                                           | 7.600  | 18.103 | 8.093  | 0.162                                          | 0.486          | 0.728          | 0.000                 | 0.000                                    | 0.000          | 0.000          | 0.00              |
| 17-Dec                 | 14                                           | 6.259  | 14.908 | 6.665  | 0.133                                          | 0.400          | 0.600          | 0.000                 | 0.000                                    | 0.000          | 0.000          | 0.00              |
| 18-Dec                 | 13                                           | 5.812  | 13.844 | 6.189  | 0.124                                          | 0.371          | 0.557          | 0.000                 | 0.000                                    | 0.000          | 0.000          | 0.00              |
| 19-Dec                 | 7                                            | 3.129  | 7.454  | 3.332  | 0.067                                          | 0.200          | 0.300          | 0.000                 | 0.000                                    | 0.000          | 0.000          | 0.00              |
| 20-Dec                 | 13                                           | 5.812  | 13.844 | 6.189  | 0.124                                          | 0.371          | 0.557          | 0.000                 | 0.000                                    | 0.000          | 0.000          | 0.00              |
| 21-Dec                 | 14                                           | 6.259  | 14.908 | 6.665  | 0.133                                          | 0.400          | 0.600          | 0.000                 | 0.000                                    | 0.000          | 0.000          | 0.00              |
| 22-Dec                 | 16                                           | 7.153  | 17.038 | 7.617  | 0.152                                          | 0.457          | 0.686          | 0.010                 | 0.000                                    | 0.000          | 0.000          | 0.00              |
| 23-Dec                 | 13                                           | 5.812  | 13.844 | 6.189  | 0.124                                          | 0.371          | 0.557          | 0.030                 | 0.000                                    | 0.000          | 0.000          | 0.00              |
| 24-Dec                 | 15                                           | 6.706  | 15.973 | 7.141  | 0.143                                          | 0.428          | 0.643          | 0.190                 | 0.000                                    | 0.000          | 0.000          | 0.00              |
| 25-Dec                 | 14                                           | 6.259  | 14.908 | 6.665  | 0.133                                          | 0.400          | 0.600          | 0.090                 | 0.000                                    | 0.000          | 0.000          | 0.00              |
| 26-Dec                 | 13                                           | 5.812  | 13.844 | 6.189  | 0.124                                          | 0.371          | 0.557          | 0.170                 | 0.000                                    | 0.000          | 0.000          | 0.00              |
| 27-Dec                 | 25                                           | 11.176 | 26.622 | 11.901 | 0.238                                          | 0.714          | 1.071          | 0.040                 | 0.000                                    | 0.000          | 0.000          | 0.00              |
| 28-Dec                 | 13                                           | 5.812  | 13.844 | 6.189  | 0.124                                          | 0.371          | 0.557          | 0.000                 | 0.000                                    | 0.000          | 0.000          | 0.00              |
| 29-Dec                 | 26                                           | 11.623 | 27.687 | 12.377 | 0.248                                          | 0.743          | 1.114          | 0.030                 | 0.000                                    | 0.000          | 0.000          | 0.00              |
| 30-Dec                 | 26                                           | 11.623 | 27.687 | 12.377 | 0.248                                          | 0.743          | 1.114          | 0.000                 | 0.000                                    | 0.000          | 2.508          | 31.29             |
| 31-Dec                 | 25                                           | 11.176 | 26.622 | 11.901 | 0.238                                          | 0.714          | 1.071          | 0.000                 | 0.000                                    | 0.000          | 1.126          | 14.05             |
| Totals:                |                                              |        |        |        |                                                |                |                |                       | 0.00                                     | 0.00           | 26.35          | 328.88            |
| Worst Case Day         |                                              |        |        |        |                                                |                |                |                       | 0.000                                    | 0.000          | 5.910          |                   |

**Storage Pile Calculations**

Control Efficiency 90.00%  
 Rain Days (>0.01") 120 AP42, Section 13.2.2  
 Storage Pile Surface Area 40468.6  
 Uncontrolled (TPY) 0.16  
 Controlled (TPY) 0.02  
 Worst Case Day (lb/24) 7 PM10 - AP42 Section 13.2.5  
 Worst Case Day (gps) 0.039

**Foster Wheeler Environmental Corporation**  
**EXCEL 7.0 Worksheet Calculation**

**By:** D. Graziani, P.E.  
**Date:** 11/3/98

**Cal. No.:** 901103DJG01  
**Project No.:** 7830.0020.0056

**Ckd. By:** Kim Evans, P.E.  
**Date:** 11/10/98

**Revision No.:** 1

**Project:** St. Johns River Power Park PSD Permit Update  
**Subject:** Emissions Estimates for Unit 1 Flyash Loadouts

**Emissions Data**

| Raw Materials | Constant | Wind Speed<br>(MPH) | H2O<br>(%) | Particle Size Multipliers |      |       | Emission Factors (lb/ton) |       |       |
|---------------|----------|---------------------|------------|---------------------------|------|-------|---------------------------|-------|-------|
|               |          |                     |            | PM                        | PM10 | PM2.5 | PM                        | PM10  | PM2.5 |
| Flyash        | 0.0032   | 8.00                | 0.25       | 0.74                      | 0.35 | 0.11  | 0.080                     | 0.038 | 0.012 |

**Operating Data**

| Raw Materials | Operating Rates |        |
|---------------|-----------------|--------|
|               | (TPD)           | (TPY)  |
| Flyash        | 600             | 219000 |

**Emission Rates - Uncontrolled**

| Raw Materials | Short-Term |         |         |       |       |       |
|---------------|------------|---------|---------|-------|-------|-------|
|               | PM         | PM10    | PM2.5   | PM    | PM10  | PM2.5 |
|               | (lb/hr)    | (lb/hr) | (lb/hr) | (g/s) | (g/s) | (g/s) |
| Flyash        | 2.00       | 0.95    | 0.30    | 0.253 | 0.120 | 0.038 |

**Emission Rates - Controlled 97.00%**

| Raw Materials | Short-Term |         |         |       |       |       |
|---------------|------------|---------|---------|-------|-------|-------|
|               | PM         | PM10    | PM2.5   | PM    | PM10  | PM2.5 |
|               | (lb/hr)    | (lb/hr) | (lb/hr) | (g/s) | (g/s) | (g/s) |
| Flyash        | 0.060      | 0.028   | 0.009   | 0.008 | 0.004 | 0.001 |

**Emission Rates - Uncontrolled**

| Raw Materials | Long-Term |       |       |       |       |       |
|---------------|-----------|-------|-------|-------|-------|-------|
|               | PM        | PM10  | PM2.5 | PM    | PM10  | PM2.5 |
|               | (TPY)     | (TPY) | (TPY) | (g/s) | (g/s) | (g/s) |
| Flyash        | 8.78      | 4.15  | 1.31  | 0.253 | 0.120 | 0.038 |

**Emission Rates - Controlled 97.00%**

| Raw Materials | Long-Term |       |       |       |       |       |
|---------------|-----------|-------|-------|-------|-------|-------|
|               | PM        | PM10  | PM2.5 | PM    | PM10  | PM2.5 |
|               | (TPY)     | (TPY) | (TPY) | (g/s) | (g/s) | (g/s) |
| Flyash        | 0.263     | 0.125 | 0.039 | 0.008 | 0.004 | 0.001 |

**References:**

Emission Factor - AP42 Chapter 13.2.4 Aggregate Handling and Storage Piles  
 Wind Speed - Annual Average  
 Moisture Contents - JEA Operational Data  
 Transfer Rates - JEA Operational Data

**Foster Wheeler Environmental Corporation**  
**EXCEL 7.0 Worksheet Calculation**

**By:** D. Graziani, P.E.  
**Date:** 11/3/98

**Cal. No.:** 901103DJG01  
**Project No.:** 7830.0020.0056

**Ckd. By:** Kim Evans, P.E.  
**Date:** 11/10/98

**Revision No.:** 1

**Project:** St. Johns River Power Park PSD Permit Update  
**Subject:** Emissions Estimates for Unit 2 Flyash Loadouts

**Emissions Data**

| Raw Materials | Constant | Wind Speed<br>(MPH) | H2O<br>(%) | Particle Size Multipliers |      |       | Emission Factors (lb/ton) |       |       |
|---------------|----------|---------------------|------------|---------------------------|------|-------|---------------------------|-------|-------|
|               |          |                     |            | PM                        | PM10 | PM2.5 | PM                        | PM10  | PM2.5 |
| Flyash        | 0.0032   | 8.00                | 0.25       | 0.74                      | 0.35 | 0.11  | 0.080                     | 0.038 | 0.012 |

**Operating Data**

| Raw Materials | Operating Rates |        |
|---------------|-----------------|--------|
|               | (TPD)           | (TPY)  |
| Flyash        | 600             | 219000 |

**Emission Rates - Uncontrolled**

| Raw Materials | Short-Term    |                 |                  |             |               |                |
|---------------|---------------|-----------------|------------------|-------------|---------------|----------------|
|               | PM<br>(lb/hr) | PM10<br>(lb/hr) | PM2.5<br>(lb/hr) | PM<br>(g/s) | PM10<br>(g/s) | PM2.5<br>(g/s) |
| Flyash        | 2.00          | 0.95            | 0.30             | 0.253       | 0.120         | 0.038          |

**Emission Rates - Controlled 97.00%**

| Raw Materials | Short-Term    |                 |                  |             |               |                |
|---------------|---------------|-----------------|------------------|-------------|---------------|----------------|
|               | PM<br>(lb/hr) | PM10<br>(lb/hr) | PM2.5<br>(lb/hr) | PM<br>(g/s) | PM10<br>(g/s) | PM2.5<br>(g/s) |
| Flyash        | 0.060         | 0.028           | 0.009            | 0.008       | 0.004         | 0.001          |

**Emission Rates - Uncontrolled**

| Raw Materials | Long-Term   |               |                |             |               |                |
|---------------|-------------|---------------|----------------|-------------|---------------|----------------|
|               | PM<br>(TPY) | PM10<br>(TPY) | PM2.5<br>(TPY) | PM<br>(g/s) | PM10<br>(g/s) | PM2.5<br>(g/s) |
| Flyash        | 8.78        | 4.15          | 1.31           | 0.253       | 0.120         | 0.038          |

**Emission Rates - Controlled 97.00%**

| Raw Materials | Long-Term   |               |                |             |               |                |
|---------------|-------------|---------------|----------------|-------------|---------------|----------------|
|               | PM<br>(TPY) | PM10<br>(TPY) | PM2.5<br>(TPY) | PM<br>(g/s) | PM10<br>(g/s) | PM2.5<br>(g/s) |
| Flyash        | 0.263       | 0.125         | 0.039          | 0.008       | 0.004         | 0.001          |

**References:**

Emission Factor - AP42 Chapter 13.2.4 Aggregate Handling and Storage Piles  
 Wind Speed - Annual Average  
 Moisture Contents - JEA Operational Data  
 Transfer Rates - JEA Operational Data

**Foster Wheeler Environmental Corporation**  
**EXCEL 7.0 Worksheet Calculation**

**By:** D. Graziani, P.E.  
**Date:** 11/3/98

**Cal. No.:** 901103DJG01  
**Project No.:** 7830.0020.0056

**Ckd. By:** Kim Evans, P.E.  
**Date:** 11/10/98

**Revision No.:** 1

**Project:** St. Johns River Power Park PSD Permit Update  
**Subject:** Emissions Estimates for Unit 1 Bottom Ash Loadouts

**Emissions Data**

| Raw Materials | Constant | Wind Speed<br>(MPH) | H2O<br>(%) | Particle Size Multipliers |      |       | Emission Factors (lb/ton) |          |          |
|---------------|----------|---------------------|------------|---------------------------|------|-------|---------------------------|----------|----------|
|               |          |                     |            | PM                        | PM10 | PM2.5 | PM                        | PM10     | PM2.5    |
| Bottom Ash    | 0.0032   | 8.00                | 12         | 0.74                      | 0.35 | 0.11  | 0.000355                  | 0.000168 | 5.28E-05 |

**Operating Data**

| Raw Materials | Operating Rates |         |
|---------------|-----------------|---------|
|               | (TPH)           | (TPY)   |
| Bottom Ash    | 250             | 2190000 |

**Emission Rates - Uncontrolled**

| Raw Materials | Short-Term    |                 |                  |             |               |                |
|---------------|---------------|-----------------|------------------|-------------|---------------|----------------|
|               | PM<br>(lb/hr) | PM10<br>(lb/hr) | PM2.5<br>(lb/hr) | PM<br>(g/s) | PM10<br>(g/s) | PM2.5<br>(g/s) |
| Bottom Ash    | 0.09          | 0.04            | 0.01             | 0.011       | 0.005         | 0.002          |

**Emission Rates - Controlled 0.00%**

| Raw Materials | Short-Term    |                 |                  |             |               |                |
|---------------|---------------|-----------------|------------------|-------------|---------------|----------------|
|               | PM<br>(lb/hr) | PM10<br>(lb/hr) | PM2.5<br>(lb/hr) | PM<br>(g/s) | PM10<br>(g/s) | PM2.5<br>(g/s) |
| Bottom Ash    | 0.089         | 0.042           | 0.013            | 0.011       | 0.005         | 0.002          |

**Emission Rates - Uncontrolled**

| Raw Materials | Long-Term   |               |                |             |               |                |
|---------------|-------------|---------------|----------------|-------------|---------------|----------------|
|               | PM<br>(TPY) | PM10<br>(TPY) | PM2.5<br>(TPY) | PM<br>(g/s) | PM10<br>(g/s) | PM2.5<br>(g/s) |
| Bottom Ash    | 0.39        | 0.18          | 0.06           | 0.011       | 0.005         | 0.002          |

**Emission Rates - Controlled 0.00%**

| Raw Materials | Long-Term   |               |                |             |               |                |
|---------------|-------------|---------------|----------------|-------------|---------------|----------------|
|               | PM<br>(TPY) | PM10<br>(TPY) | PM2.5<br>(TPY) | PM<br>(g/s) | PM10<br>(g/s) | PM2.5<br>(g/s) |
| Bottom Ash    | 0.389       | 0.184         | 0.058          | 0.011       | 0.005         | 0.002          |

**References:**

Emission Factor - AP42 Chapter 13.2.4 Aggregate Handling and Storage Piles  
Wind Speed - Annual Average  
Moisture Contents - JEA Operational Data  
Transfer Rates - JEA Operational Data

**Foster Wheeler Environmental Corporation**  
**EXCEL 7.0 Worksheet Calculation**

**By:** D. Graziani, P.E.  
**Date:** 11/3/98  
**Ckd. By:** Kim Evans, P.E.  
**Date:** 11/10/98

**Cal. No.:** 901103DJG01  
**Project No.:** 7830.0020.0056

**Revision No.:** 1

**Project:** St. Johns River Power Park PSD Permit Update  
**Subject:** Emissions Estimates for Unit 2 Bottom Ash Loadouts

**Emissions Data**

| Raw Materials | Constant | Wind Speed<br>(MPH) | H2O<br>(%) | Particle Size Multipliers |      |       | Emission Factors (lb/ton) |          |          |
|---------------|----------|---------------------|------------|---------------------------|------|-------|---------------------------|----------|----------|
|               |          |                     |            | PM                        | PM10 | PM2.5 | PM                        | PM10     | PM2.5    |
| Bottom Ash    | 0.0032   | 8.00                | 12         | 0.74                      | 0.35 | 0.11  | 0.000355                  | 0.000168 | 5.28E-05 |

**Operating Data**

| Raw Materials | Operating Rates |         |
|---------------|-----------------|---------|
|               | (TPH)           | (TPY)   |
| Bottom Ash    | 250             | 2190000 |

**Emission Rates - Uncontrolled**

| Raw Materials | Short-Term    |                 |                  |             |               |                |
|---------------|---------------|-----------------|------------------|-------------|---------------|----------------|
|               | PM<br>(lb/hr) | PM10<br>(lb/hr) | PM2.5<br>(lb/hr) | PM<br>(g/s) | PM10<br>(g/s) | PM2.5<br>(g/s) |
| Bottom Ash    | 0.09          | 0.04            | 0.01             | 0.011       | 0.005         | 0.002          |

**Emission Rates - Controlled 0.00%**

| Raw Materials | Short-Term    |                 |                  |             |               |                |
|---------------|---------------|-----------------|------------------|-------------|---------------|----------------|
|               | PM<br>(lb/hr) | PM10<br>(lb/hr) | PM2.5<br>(lb/hr) | PM<br>(g/s) | PM10<br>(g/s) | PM2.5<br>(g/s) |
| Bottom Ash    | 0.089         | 0.042           | 0.013            | 0.011       | 0.005         | 0.002          |

**Emission Rates - Uncontrolled**

| Raw Materials | Long-Term   |               |                |             |               |                |
|---------------|-------------|---------------|----------------|-------------|---------------|----------------|
|               | PM<br>(TPY) | PM10<br>(TPY) | PM2.5<br>(TPY) | PM<br>(g/s) | PM10<br>(g/s) | PM2.5<br>(g/s) |
| Bottom Ash    | 0.39        | 0.18          | 0.06           | 0.011       | 0.005         | 0.002          |

**Emission Rates - Controlled 0.00%**

| Raw Materials | Long-Term   |               |                |             |               |                |
|---------------|-------------|---------------|----------------|-------------|---------------|----------------|
|               | PM<br>(TPY) | PM10<br>(TPY) | PM2.5<br>(TPY) | PM<br>(g/s) | PM10<br>(g/s) | PM2.5<br>(g/s) |
| Bottom Ash    | 0.389       | 0.184         | 0.058          | 0.011       | 0.005         | 0.002          |

**References:**

Emission Factor - AP42 Chapter 13.2.4 Aggregate Handling and Storage Piles  
Wind Speed - Annual Average  
Moisture Contents - JEA Operational Data  
Transfer Rates - JEA Operational Data

**Foster Wheeler Environmental Corporation**  
**EXCEL 7.0 Worksheet Calculation**

**By:** D. Graziani, P.E.

**Date:** 11/3/98

**Ckd. By:** Kim Evans, P.E.

**Date:** 11/10/98

**Cal. No.:** 901103DJG01

**Project No.:** 7830.0020.0056

**Revision No.:** 1

**Project:** St. Johns River Power Park PSD Permit Update

**Subject:** Emissions Estimates for the Gypsum Dewatering Building (16 Transfer Points)

**Emissions Data**

| Raw Materials | Constant | Belt Speed<br>(MPH) | H2O<br>(%) | Particle Size Multipliers |      |       | Emission Factors (lb/ton) |          |          |
|---------------|----------|---------------------|------------|---------------------------|------|-------|---------------------------|----------|----------|
|               |          |                     |            | PM                        | PM10 | PM2.5 | PM                        | PM10     | PM2.5    |
| Gypsum        | 0.0032   | 1.15                | 10         | 0.74                      | 0.35 | 0.11  | 3.67E-05                  | 1.74E-05 | 5.46E-06 |

**Operating Data**

| Raw Materials | Operating Rates |         |
|---------------|-----------------|---------|
|               | (TPH)           | (TPY)   |
| Gypsum        | 72              | 1261440 |

**Emission Rates - Uncontrolled**

| Raw Materials | Short-Term    |                 |                  |             |               |                |
|---------------|---------------|-----------------|------------------|-------------|---------------|----------------|
|               | PM<br>(lb/hr) | PM10<br>(lb/hr) | PM2.5<br>(lb/hr) | PM<br>(g/s) | PM10<br>(g/s) | PM2.5<br>(g/s) |
| Gypsum        | 0.04          | 0.02            | 0.01             | 0.0053      | 0.0025        | 0.0008         |

**Emission Rates - Controlled 0.00%**

| Raw Materials | Short-Term    |                 |                  |             |               |                |
|---------------|---------------|-----------------|------------------|-------------|---------------|----------------|
|               | PM<br>(lb/hr) | PM10<br>(lb/hr) | PM2.5<br>(lb/hr) | PM<br>(g/s) | PM10<br>(g/s) | PM2.5<br>(g/s) |
| Gypsum        | 0.042         | 0.020           | 0.0063           | 0.0053      | 0.0025        | 0.0008         |

**Emission Rates - Uncontrolled**

| Raw Materials | Long-Term   |               |                |             |               |                |
|---------------|-------------|---------------|----------------|-------------|---------------|----------------|
|               | PM<br>(TPY) | PM10<br>(TPY) | PM2.5<br>(TPY) | PM<br>(g/s) | PM10<br>(g/s) | PM2.5<br>(g/s) |
| Gypsum        | 0.05        | 0.02          | 0.01           | 0.00133     | 0.00063       | 0.0002         |

**Emission Rates - Controlled 0.00%**

| Raw Materials | Long-Term   |               |                |             |               |                |
|---------------|-------------|---------------|----------------|-------------|---------------|----------------|
|               | PM<br>(TPY) | PM10<br>(TPY) | PM2.5<br>(TPY) | PM<br>(g/s) | PM10<br>(g/s) | PM2.5<br>(g/s) |
| Gypsum        | 0.046       | 0.022         | 0.007          | 0.0013      | 0.0006        | 0.0002         |

**References:**

Emission Factor - AP42 Chapter 13.2.4 Aggregate Handling and Storage Piles

Belt Speed - JEA Operation Data

Moisture Contents - JEA Operational Data

Transfer Rates - JEA Operational Data

**Foster Wheeler Environmental Corporation  
EXCEL 7.0 Worksheet Calculation**

**By:** D. Graziani, P.E.  
**Date:** 11/3/98

**Cal. No.:** 901103DJG01  
**Project No.:** 7830.0020.0056

**Ckd. By:** Kim Evans, P.E.  
**Date:** 11/10/98

**Revision No.:** 1

**Project:** St. Johns River Power Park PSD Permit Update  
**Subject:** Emissions Estimates for the Gypsum Storage Building

**Emissions Data**

| Raw Materials | Constant | Belt Speed<br>(MPH) | H2O<br>(%) | Particle Size Multipliers |      |       | Emission Factors (lb/ton) |          |          |
|---------------|----------|---------------------|------------|---------------------------|------|-------|---------------------------|----------|----------|
|               |          |                     |            | PM                        | PM10 | PM2.5 | PM                        | PM10     | PM2.5    |
| Gypsum        | 0.0032   | 1.51                | 10         | 0.74                      | 0.35 | 0.11  | 5.25E-05                  | 2.48E-05 | 7.81E-06 |

**Operating Data**

| Transfer Point | Operating Rates |         |
|----------------|-----------------|---------|
|                | (TPH)           | (TPY)   |
| Gypsum         | 144             | 1261440 |

**Emission Rates - Uncontrolled**

| Raw Materials | Short-Term    |                 |                  |             |               |                |
|---------------|---------------|-----------------|------------------|-------------|---------------|----------------|
|               | PM<br>(lb/hr) | PM10<br>(lb/hr) | PM2.5<br>(lb/hr) | PM<br>(g/s) | PM10<br>(g/s) | PM2.5<br>(g/s) |
| Gypsum        | 0.008         | 0.004           | 0.001            | 0.0010      | 0.0005        | 0.0001         |

**Emission Rates - Controlled 0.00%**

| Raw Materials | Short-Term    |                 |                  |             |               |                |
|---------------|---------------|-----------------|------------------|-------------|---------------|----------------|
|               | PM<br>(lb/hr) | PM10<br>(lb/hr) | PM2.5<br>(lb/hr) | PM<br>(g/s) | PM10<br>(g/s) | PM2.5<br>(g/s) |
| Gypsum        | 0.008         | 0.004           | 0.001            | 0.0010      | 0.0005        | 0.0001         |

**Emission Rates - Uncontrolled**

| Raw Materials | Long-Term   |               |                |             |               |                |
|---------------|-------------|---------------|----------------|-------------|---------------|----------------|
|               | PM<br>(TPY) | PM10<br>(TPY) | PM2.5<br>(TPY) | PM<br>(g/s) | PM10<br>(g/s) | PM2.5<br>(g/s) |
| Gypsum        | 0.033       | 0.016         | 0.005          | 0.0010      | 0.0005        | 0.0001         |

**Emission Rates - Controlled 0.00%**

| Raw Materials | Long-Term   |               |                |             |               |                |
|---------------|-------------|---------------|----------------|-------------|---------------|----------------|
|               | PM<br>(TPY) | PM10<br>(TPY) | PM2.5<br>(TPY) | PM<br>(g/s) | PM10<br>(g/s) | PM2.5<br>(g/s) |
| Gypsum        | 0.033       | 0.016         | 0.005          | 0.0010      | 0.0005        | 0.0001         |

**References:**

Emission Factor - AP42 Chapter 13.2.4 Aggregate Handling and Storage Piles  
Belt Speed - JEA Operation Data  
Moisture Contents - JEA Operational Data  
Transfer Rates - JEA Operational Data

**Foster Wheeler Environmental Corporation**  
**EXCEL 7.0 Worksheet Calculation**

**By:** D. Graziani, P.E.

**Date:** 11/3/98

**Ckd. By:** Kim Evans, P.E.

**Date:** 11/10/98

**Cal. No.:** 901103DJG01

**Project No.:** 7830.0020.0056

**Revision No.:** 1

**Project:** St. Johns River Power Park PSD Permit Update

**Subject:** Emissions Estimates for the Gypsum Storage Building Truck Loadout

**Emissions Data**

| Raw Materials | Constant | Wind Speed<br>(MPH) | H2O<br>(%) | Particle Size Multipliers |      |       | Emission Factors (lb/ton) |         |         |
|---------------|----------|---------------------|------------|---------------------------|------|-------|---------------------------|---------|---------|
|               |          |                     |            | PM                        | PM10 | PM2.5 | PM                        | PM10    | PM2.5   |
| Gypsum        | 0.0032   | 8.00                | 10         | 0.74                      | 0.35 | 0.11  | 0.00046                   | 0.00022 | 0.00007 |

**Operating Data**

| Transfer Point | Operating Rates |         |
|----------------|-----------------|---------|
|                | (TPH)           | (TPY)   |
| Gypsum         | 300             | 1261440 |

**Emission Rates - Uncontrolled**

| Raw Materials | Short-Term    |                 |                  |             |               |                |
|---------------|---------------|-----------------|------------------|-------------|---------------|----------------|
|               | PM<br>(lb/hr) | PM10<br>(lb/hr) | PM2.5<br>(lb/hr) | PM<br>(g/s) | PM10<br>(g/s) | PM2.5<br>(g/s) |
| Gypsum        | 0.27          | 0.13            | 0.04             | 0.0347      | 0.0164        | 0.0052         |

2 - Transfer Points

**Emission Rates - Controlled 0.00%**

| Raw Materials | Short-Term    |                 |                  |             |               |                |
|---------------|---------------|-----------------|------------------|-------------|---------------|----------------|
|               | PM<br>(lb/hr) | PM10<br>(lb/hr) | PM2.5<br>(lb/hr) | PM<br>(g/s) | PM10<br>(g/s) | PM2.5<br>(g/s) |
| Gypsum        | 0.275         | 0.130           | 0.041            | 0.035       | 0.016         | 0.005          |

2 - Transfer Points

**Emission Rates - Uncontrolled**

| Raw Materials | Long-Term   |               |                |             |               |                |
|---------------|-------------|---------------|----------------|-------------|---------------|----------------|
|               | PM<br>(TPY) | PM10<br>(TPY) | PM2.5<br>(TPY) | PM<br>(g/s) | PM10<br>(g/s) | PM2.5<br>(g/s) |
| Gypsum        | 0.58        | 0.27          | 0.09           | 0.0166      | 0.0079        | 0.0025         |

**Emission Rates - Controlled 0.00%**

| Raw Materials | Long-Term   |               |                |             |               |                |
|---------------|-------------|---------------|----------------|-------------|---------------|----------------|
|               | PM<br>(TPY) | PM10<br>(TPY) | PM2.5<br>(TPY) | PM<br>(g/s) | PM10<br>(g/s) | PM2.5<br>(g/s) |
| Gypsum        | 0.578       | 0.273         | 0.086          | 0.017       | 0.008         | 0.002          |

**References:**

Emission Factor - AP42 Chapter 13.2.4 Aggregate Handling and Storage Piles

Wind Speed - Annual Average

Moisture Contents - JEA Operational Data

Transfer Rates - JEA Operational Data



**Foster Wheeler Environmental Corporation**  
**EXCEL 7.0 Worksheet Calculation**

**By:** D. Graziani, P.E.

**Date:** 11/3/98

**Ckd. By:** Kim Evans, P.E.

**Date:** 11/13/98

**Cal. No.:** 901107DJG01

**Project No.:** 7830.0020.0056

**Revision No.:** 1

**Project:** Northside Repowering Project - Materials Handling & Storage Operations, Base Case

**Subject:** Emissions Estimates for Vehicle Activities - Unpaved Roads

**Vehicles**

| Vehicle Type | Weight<br>(Tons) | VMT - Miles |    |    |       |
|--------------|------------------|-------------|----|----|-------|
|              |                  | Coal        | PC | LS | Roads |
| Tractor      | 30               | 0           | 0  | 0  | 0     |
| Haul Trucks  | 35               | 0           | 0  | 0  | 0     |
| Water Trucks | 45               | 0           | 0  | 0  | 3920  |
| Automobiles  | 1.5              | 0           | 0  | 0  | 456   |

VMT - Vehicle Miles Traveled

PC - Petroleum Coke

LS - Limestone

**Emission Constants - Table 13.2.2-2, AP-42**

|          | PM-2.5 | PM-10 | PM-30 |
|----------|--------|-------|-------|
| <b>k</b> | 0.38   | 2.6   | 10    |
| <b>a</b> | 0.8    | 0.8   | 0.8   |
| <b>b</b> | 0.4    | 0.4   | 0.5   |
| <b>c</b> | 0.3    | 0.3   | 0.4   |

**Uncontrolled Emissions (TPY)**

| Area          | Moisture<br>(%) | Silt<br>(%) | Uncontrolled Emissions (tpy) |       |       |
|---------------|-----------------|-------------|------------------------------|-------|-------|
|               |                 |             | PM-2.5                       | PM-10 | PM-30 |
| Unpaved Roads | 3               | 6           | 0.58                         | 3.95  | 15.07 |

**Controlled Emissions (TPY)**

| Area          | # of Rain<br>Days | Control<br>(%) | Controlled Emissions (tpy) |       |       |
|---------------|-------------------|----------------|----------------------------|-------|-------|
|               |                   |                | PM-2.5                     | PM-10 | PM-30 |
| Unpaved Roads | 120               | 75.00%         | 0.10                       | 0.66  | 2.53  |

### III. EMISSIONS UNIT INFORMATION

#### A. TYPE OF EMISSIONS UNIT (Regulated and Unregulated Emissions Units)

Emissions Unit Information Section 2

SJRPP - Rotary Railcar Dumper, Transfer Points (DC-1)

#### Type of Emissions Unit Addressed in This Section

1. Regulated or Unregulated Emissions Unit? Check one :

- ☒ 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.

2. Single Process, Group of Processes, or Fugitive Only? 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.

III. Part 1 - 1

**B. GENERAL EMISSIONS UNIT INFORMATION**  
**(Regulated and Unregulated Emissions Units)**

**Emissions Unit Description and Status**

|                                                                                                                                                           |                                      |                                                |
|-----------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------------------|------------------------------------------------|
| 1. Description of Emissions Unit Addressed in This Section :<br><br>SJRPP - Rotary Railcar Dumper, Transfer Points (DC-1)                                 |                                      |                                                |
| 2. Emissions Unit Identification Number : 043<br>[ ] No Corresponding ID [ ] Unknown                                                                      |                                      |                                                |
| 3. Emissions Unit Status<br>Code : A                                                                                                                      | 4. Acid Rain Unit?<br>[ ] Yes [X] No | 5. Emissions Unit Major<br>Group SIC Code : 49 |
| 6. Emissions Unit Comment :<br><br>Emissions Unit consists of the transfer points associated with the Railcar Unloading System. (See Attachment EU043-01) |                                      |                                                |

**Emissions Unit Information Section**      2

SJRPP - Rotary Railcar Dumper, Transfer Points (DC-1)

**Emissions Unit Control Equipment**      1

1. Description :

Emissions are controlled by use of a single baghouse.

2. Control Device or Method Code :      18

**C. EMISSIONS UNIT DETAIL INFORMATION**  
(Regulated Emissions Units Only)

**Emissions Unit Information Section**      2  
SJRPP - Rotary Railcar Dumper, Transfer Points (DC-1)

**Emissions Unit Details**

|                                       |             |                    |
|---------------------------------------|-------------|--------------------|
| 1. Initial Startup Date :             | 06-Aug-1988 |                    |
| 2. Long-term Reserve Shutdown Date :  |             |                    |
| 3. Package Unit :                     |             |                    |
| Manufacturer :                        |             | Model Number :     |
| 4. Generator Nameplate Rating :       | MW          |                    |
| 5. Incinerator Information :          |             |                    |
| Dwell Temperature :                   |             | Degrees Fahrenheit |
| Dwell Time :                          |             | Seconds            |
| Incinerator Afterburner Temperature : |             | Degrees Fahrenheit |

**Emissions Unit Operating Capacity**

|                                         |          |               |
|-----------------------------------------|----------|---------------|
| 1. Maximum Heat Input Rate :            | mmBtu/hr |               |
| 2. Maximum Incinerator Rate :           | lb/hr    | tons/day      |
| 3. Maximum Process or Throughput Rate : | 4000     | tons per hour |
| 4. Maximum Production Rate :            |          |               |
| 5. Operating Capacity Comment :         |          |               |

**Emissions Unit Operating Schedule**

|                                        |                  |
|----------------------------------------|------------------|
| Requested Maximum Operating Schedule : |                  |
| 24 hours/day                           | 7 days/week      |
| 52 weeks/year                          | 8,760 hours/year |

**D. EMISSIONS UNIT REGULATIONS**  
**(Regulated Emissions Units Only)**

**Emissions Unit Information Section**      2  
SJRPP - Rotary Railcar Dumper, Transfer Points (DC-1)

**Rule Applicability Analysis**

Unit was subject to PSD Review including the application of BACT and also subject to 40 CFR Part 60, Subpart Y - Standards of Performance for Coal Preparation Plants while processing coal.

III. Part 6a - 1

DEP Form No. 62-210.900(1) - Form  
Effective : 3-21-96

**Emissions Unit Information Section** 2  
SJRPP - Rotary Railcar Dumper, Transfer Points (DC-1)

**List of Applicable Regulations**

Rule 62-204.800(7)(b).31, F.A.C., Adoption of 40 CFR Part 60 Subpart Y

Rule 62-204.800(7)(c), F.A.C., NSPS Controlling Standards

Rule 62-204.800(7)(d), F.A.C., Adoption of the General Provisions (As Noted)

Rule 62-204.800(7)(e), F.A.C., Adoption of the NSPS Appendices (As Noted)

Rule 62-210.300(1), F.A.C., Air Construction Permit

Rule 62-210.550, F.A.C., Stack Height Policy

Rule 62-210.650, F.A.C., Circumvention

Rule 62-210.700(1), (4), & (6), F.A.C., Excess Emissions

Rule 62-297.310, F.A.C., General Test Requirements

Rule 62-212.300, F.A.C., General Preconstruction Review Requirements

Rule 62-297.401 (5) & (9), F.A.C., EPA Methods 5 and 9, 40 CFR Part 60, Appendix A

40 CFR Part 60.7, Notification and Recordkeeping

40 CFR Part 60.8, Performance Tests

**III. Part 6b - 1**

DEP Form No. 62-210.900(1) - Form  
Effective : 3-21-96

**List of Applicable Regulations**

40 CFR Part 60.11, Compliance with Standards and Maintenance Requirements

40 CFR Part 60.12, Circumvention

40 CFR Part 60.13, Monitoring Requirements

40 CFR Part 60.19, General Notifications and Reporting Requirements

40 CFR Part 60 Subpart Y - Standards of Performance for Coal Preparation Plants

40 CFR Part 60.250(a), Applicability and Designation of Affected Facility

40 CFR Part 60.252(c), Standards for Particulate Matter

40 CFR Part 60.254(b)(2), Test Methods and Procedures

Rule 2.201, Adoption of Chapter 62-204, F.A.C. (as noted)

Rule 2.301, Adoption of Chapter 62-210, F.A.C. (as noted)

Rule 2.1101, Adoption of Chapter 62-297, F.A.C. (as noted)

Rule 2.1203, E., Air Pollution Nuisances Prohibited

Rule 2.1301, Adoption of Chapter 62-4, F.A.C. (as noted)

**III. Part 6b - 2**

DEP Form No. 62-210.900(1) - Form  
Effective : 3-21-96



**Emissions Unit Information Section** 2  
SJRPP - Rotary Railcar Dumper, Transfer Points (DC-1)

**List of Applicable Regulations**

Rule 2.105, Maintenance of Air Pollution Control Devices

III. Part 6b - 3

DEP Form No. 62-210.900(1) - Form  
Effective : 3-21-96

## E. EMISSION POINT (STACK/VENT) INFORMATION

Emissions Unit Information Section 2

SJRPP - Rotary Railcar Dumper, Transfer Points (DC-1)

Emission Point Description and Type :

|                                                                                                                            |                                           |
|----------------------------------------------------------------------------------------------------------------------------|-------------------------------------------|
| 1. Identification of Point on Plot Plan or Flow Diagram :                                                                  | DC-1                                      |
| 2. Emission Point Type Code :                                                                                              | 2                                         |
| 3. Descriptions of Emission Points Comprising this Emissions Unit for VE Tracking :<br>(limit to 100 characters per point) |                                           |
| 4. ID Numbers or Descriptions of Emission Units with this Emission Point in Common :                                       | SJRPP Rail Car Unloading System           |
| 5. Discharge Type Code :                                                                                                   | V                                         |
| 6. Stack Height :                                                                                                          | 38 feet                                   |
| 7. Exit Diameter :                                                                                                         | 2.5 feet                                  |
| 8. Exit Temperature :                                                                                                      | 68 °F                                     |
| 9. Actual Volumetric Flow Rate :                                                                                           | 17000 acfm                                |
| 10. Percent Water Vapor :                                                                                                  | 2.00 %                                    |
| 11. Maximum Dry Standard Flow Rate :                                                                                       | 17000 dscfm                               |
| 12. Nonstack Emission Point Height :                                                                                       | 0 feet                                    |
| 13. Emission Point UTM Coordinates :                                                                                       |                                           |
| Zone : 17                                                                                                                  | East (km) : 447.500 North (km) : 3366.500 |
| 14. Emission Point Comment :                                                                                               |                                           |

III. Part 7a - 1

DEP Form No. 62-210.900(1) - Form  
Effective : 3-21-96

## F. SEGMENT (PROCESS/FUEL) INFORMATION

Emissions Unit Information Section 2

SJRPP - Rotary Railcar Dumper, Transfer Points (DC-1)

**Segment Description and Rate :** Segment 1

|                                                                                               |                                       |
|-----------------------------------------------------------------------------------------------|---------------------------------------|
| 1. Segment Description (Process/Fuel Type and Associated Operating Method/Mode) :<br><br>Coal |                                       |
| 2. Source Classification Code (SCC) : 30501099                                                |                                       |
| 3. SCC Units : Tons Processed                                                                 |                                       |
| 4. Maximum Hourly Rate : 4,000.00                                                             | 5. Maximum Annual Rate : 5,126,000.00 |
| 6. Estimated Annual Activity Factor : 0.00                                                    |                                       |
| 7. Maximum Percent Sulfur :                                                                   | 8. Maximum Percent Ash :              |
| 9. Million Btu per SCC Unit :                                                                 |                                       |
| 10. Segment Comment :                                                                         |                                       |

III. Part 8 - 1

## F. SEGMENT (PROCESS/FUEL) INFORMATION

Emissions Unit Information Section 2

SJRPP - Rotary Railcar Dumper, Transfer Points (DC-1)

**Segment Description and Rate :** Segment 2

|                                                                                                         |                                       |
|---------------------------------------------------------------------------------------------------------|---------------------------------------|
| 1. Segment Description (Process/Fuel Type and Associated Operating Method/Mode) :<br><br>Petroleum Coke |                                       |
| 2. Source Classification Code (SCC) : 30501099                                                          |                                       |
| 3. SCC Units : Tons Processed                                                                           |                                       |
| 4. Maximum Hourly Rate : 4,000.00                                                                       | 5. Maximum Annual Rate : 5,126,000.00 |
| 6. Estimated Annual Activity Factor : 0.00                                                              |                                       |
| 7. Maximum Percent Sulfur :                                                                             | 8. Maximum Percent Ash :              |
| 9. Million Btu per SCC Unit :                                                                           |                                       |
| 10. Segment Comment :                                                                                   |                                       |

III. Part 8 - 2

**G. EMISSIONS UNIT POLLUTANTS**  
**(Regulated and Unregulated Emissions Units)**

**Emissions Unit Information Section**      2  
SJRPP - Rotary Railcar Dumper, Transfer Points (DC-1)

| 1. Pollutant Emitted | 2. Primary Control Device Code | 3. Secondary Control Device Code | 4. Pollutant Regulatory Code |
|----------------------|--------------------------------|----------------------------------|------------------------------|
| 1 - PM               | 018                            |                                  | EL                           |
| 2 - PM10             | 018                            |                                  | EL                           |

III. Part 9a - 1

DEP Form No. 62-210.900(1) - Form  
Effective : 3-21-96

**Emissions Unit Information Section** 2  
**SJRPP - Rotary Railcar Dumper, Transfer Points (DC-1)**

|                                                                                                                                                                             |  |  |
|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--|--|
| 1. Pollutant Emitted : <b>PM</b>                                                                                                                                            |  |  |
| 2. Total Percent Efficiency of Control :            99.50            %                                                                                                      |  |  |
| 3. Potential Emissions :<br><div style="display: flex; justify-content: space-between;"> <span>0.1740000 lb/hour</span> <span>0.1100000 tons/year</span> </div>             |  |  |
| 4. Synthetically Limited?<br><input type="checkbox"/> Yes <input checked="" type="checkbox"/> No                                                                            |  |  |
| 5. Range of Estimated Fugitive/Other Emissions:<br><div style="display: flex; justify-content: space-between;"> <span></span> <span>to</span> <span>tons/year</span> </div> |  |  |
| 6. Emissions Factor            0            Units lb/ton<br>Reference AP-42, (EF=0.0011)                                                                                    |  |  |
| 7. Emissions Method Code :    3                                                                                                                                             |  |  |
| 8. Calculations of Emissions :<br><br>See Attachment EU043-05                                                                                                               |  |  |
| 9. Pollutant Potential/Estimated Emissions Comment :                                                                                                                        |  |  |



|                                                                                                  |                    |                     |
|--------------------------------------------------------------------------------------------------|--------------------|---------------------|
| 1. Pollutant Emitted : <b>PM10</b>                                                               |                    |                     |
| 2. Total Percent Efficiency of Control :                                                         | 99.50              | %                   |
| 3. Potential Emissions :                                                                         | 0.0820000 lb/hour  | 0.0530000 tons/year |
| 4. Synthetically Limited?<br><input type="checkbox"/> Yes <input checked="" type="checkbox"/> No |                    |                     |
| 5. Range of Estimated Fugitive/Other Emissions:                                                  |                    | to      tons/year   |
| 6. Emissions Factor                                                                              | 0                  | Units lb/ton        |
| Reference                                                                                        | AP-42, (EF=0.0005) |                     |
| 7. Emissions Method Code :                                                                       | 3                  |                     |
| 8. Calculations of Emissions :<br><br>See Attachment EU043-05                                    |                    |                     |
| 9. Pollutant Potential/Estimated Emissions Comment :                                             |                    |                     |

**Emissions Unit Information Section** 2  
SJRPP - Rotary Railcar Dumper, Transfer Points (DC-1)

**Pollutant Information Section** 1

**Allowable Emissions** 1

|                                                                                     |                                                                                |                 |                |
|-------------------------------------------------------------------------------------|--------------------------------------------------------------------------------|-----------------|----------------|
| 1. Basis for Allowable Emissions Code :                                             | RULE                                                                           |                 |                |
| 2. Future Effective Date of Allowable Emissions :                                   | 01-Aug-1999                                                                    |                 |                |
| 3. Requested Allowable Emissions and Units :                                        | 5.00                                                                           | percent opacity |                |
| 4. Equivalent Allowable Emissions :                                                 | 0.17                                                                           | lb/hour         | 0.11 tons/year |
| 5. Method of Compliance :                                                           | Stack Test Waiver Requested Rule 62-297.310(7)(c), F.A.C.                      |                 |                |
| 6. Pollutant Allowable Emissions Comment (Desc. of Related Operating Method/Mode) : | Updated BACT from 10% opacity to no visible emissions limitation (5% Opacity). |                 |                |

III. Part 9c - 1



**Emissions Unit Information Section** 2  
SJRPP - Rotary Railcar Dumper, Transfer Points (DC-1)

**Pollutant Information Section** 2

**Allowable Emissions** 1

|                                                                                     |                                                                                                    |                 |                |
|-------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------|-----------------|----------------|
| 1. Basis for Allowable Emissions Code :                                             | OTHER                                                                                              |                 |                |
| 2. Future Effective Date of Allowable Emissions :                                   | 01-Aug-1999                                                                                        |                 |                |
| 3. Requested Allowable Emissions and Units :                                        | 5.00                                                                                               | percent opacity |                |
| 4. Equivalent Allowable Emissions :                                                 | 0.08                                                                                               | lb/hour         | 0.05 tons/year |
| 5. Method of Compliance :                                                           | Stack Test Waiver Requested Rule 62-297.310(7)(c), F.A.C.                                          |                 |                |
| 6. Pollutant Allowable Emissions Comment (Desc. of Related Operating Method/Mode) : | Updated BACT revised from 10% opacity to a requested no visible emissions limitation (5% Opacity). |                 |                |

III. Part 9c - 2

**I. VISIBLE EMISSIONS INFORMATION**  
**(Regulated Emissions Units Only)**

**Emissions Unit Information Section**    2  
SJRPP - Rotary Railcar Dumper, Transfer Points (DC-1)

**Visible Emissions Limitation :** Visible Emissions Limitation    1

|                                                                                                                                                                                                                                                                                                                         |
|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 1. Visible Emissions Subtype :                      05                                                                                                                                                                                                                                                                  |
| 2. Basis for Allowable Opacity :                      OTHER                                                                                                                                                                                                                                                             |
| 3. Requested Allowable Opacity :<br><div style="text-align: right; margin-top: 10px;">Normal Conditions :                      5                      %<br/>Exceptional Conditions :                      100                      %<br/>Maximum Period of Excess Opacity Allowed :                      min/hour</div> |
| 4. Method of Compliance :<br><br>EPA Method 9                                                                                                                                                                                                                                                                           |
| 5. Visible Emissions Comment :<br><br>Updated BACT revised from 10% opacity to a requested no visible emissions limitation (5% Opacity).<br><br>Excess Opacity - 2 hours in any 24-hour period                                                                                                                          |

III. Part 10 - 1

**J. CONTINUOUS MONITOR INFORMATION**  
**(Regulated Emissions Units Only)**

**Emissions Unit Information Section**

III. Part 11 - 1

DEP Form No. 62-210.900(1) - Form  
Effective : 3-21-96

## K. PREVENTION OF SIGNIFICANT DETERIORATION (PSD) INCREMENT TRACKING INFORMATION

Emissions Unit Information Section 2

SJRPP - Rotary Railcar Dumper, Transfer Points (DC-1)

### PSD Increment Consumption Determination

#### 1. Increment Consuming for Particulate Matter or Sulfur Dioxide?

- ☐ The emissions unit is undergoing PSD review as part of this application, or has undergone PSD review previously, for particulate matter or sulfur dioxide. If so, emissions unit consumes increment.
- ☐ The facility addressed in this application is classified as an EPA major source pursuant to paragraph (c) of the definition of "major source of air pollution" in Chapter 62-213, F.A.C., and the emissions unit addressed in this section commenced (or will commence) construction after January 6, 1975. If so, baseline emissions are zero, and emissions unit consumes increment.
- ☐ The facility addressed in this application is classified as an EPA major source, and the emissions unit began initial operation after January 6, 1975, but before December 27, 1977. If so, baseline emissions are zero, and emissions unit consumes increment.
- ☒ For any facility, the emissions unit began (or will begin) initial operation after December 27, 1977. If so, baseline emissions are zero, and emissions unit consumes increment.
- ☐ None of the above apply. If so, the baseline emissions of the emissions unit are nonzero. In such case, additional analysis, beyond the scope of this application, is needed to determine whether changes in emissions have occurred (or will occur) after the baseline date that may consume or expand increment.

III. Part 12 - 1

## 2. Increment Consuming for Nitrogen Dioxide?

- ☐ The emissions unit addressed in this section is undergoing PSD review as part of this application, or has undergone PSD review previously, for nitrogen dioxide. If so, emissions unit consumes increment.
- ☐ The facility addressed in this application is classified as an EPA major source pursuant to paragraph (c) of the definition of "major source of air pollution" in Chapter 62-213, F.A.C., and the emissions unit addressed in this section commenced (or will commence) construction after February 8, 1988. If so, baseline emissions are zero, and emissions unit consumes increment.
- ☐ The facility addressed in this application is classified as an EPA major source, and the emissions unit began initial operation after February 8, 1988, but before March 28, 1988. If so, baseline emissions are zero, and emissions unit consumes increment.
- ☐ For any facility, the emissions unit began (or will begin) initial operation after March 28, 1988. If so, baseline emissions are zero, and emissions unit consumes increment.
- ☐ None of the above apply. If so, baseline emissions of the emissions unit are nonzero. In such case, additional analysis, beyond the scope of this application, is needed to determine whether changes in emissions have occurred (or will occur) after the baseline date that may consume or expand increment.

|                                         |                |                  |
|-----------------------------------------|----------------|------------------|
| 3. Increment Consuming/Expanding Code : |                |                  |
| PM :                                    | C              | NO2 :            |
| 4. Baseline Emissions :                 |                |                  |
| PM :                                    | 0.0000 lb/hour | 0.0000 tons/year |
| SO2 :                                   | lb/hour        | tons/year        |
| NO2 :                                   |                | tons/year        |
| 5. PSD Comment :                        |                |                  |

## L. EMISSIONS UNIT SUPPLEMENTAL INFORMATION

Emissions Unit Information Section 2

SJRPP - Rotary Railcar Dumper, Transfer Points (DC-1)

### Supplemental Requirements for All Applications

|                                                                   |          |
|-------------------------------------------------------------------|----------|
| 1. Process Flow Diagram :                                         | EU043-01 |
| 2. Fuel Analysis or Specification :                               | NA       |
| 3. Detailed Description of Control Equipment :                    | EU043-02 |
| 4. Description of Stack Sampling Facilities :                     | EU043-03 |
| 5. Compliance Test Report :                                       | EU043-04 |
| 6. Procedures for Startup and Shutdown :                          | NA       |
| 7. Operation and Maintenance Plan :                               | NA       |
| 8. Supplemental Information for Construction Permit Application : | EU043-05 |
| 9. Other Information Required by Rule or Statue :                 | NA       |

### Additional Supplemental Requirements for Category I Applications Only

|                                                          |
|----------------------------------------------------------|
| 10. Alternative Methods of Operations :                  |
| 11. Alternative Modes of Operation (Emissions Trading) : |

III. Part 13 - 1

12. Identification of Additional Applicable Requirements :

13. Compliance Assurance Monitoring  
Plan :

14. Acid Rain Application (Hard-copy Required) :

Acid Rain Part - Phase II (Form No. 62-210.900(1)(a))

Repowering Extension Plan (Form No. 62-210.900(1)(a)1.)

New Unit Exemption (Form No. 62-210.900(1)(a)2.)

Retired Unit Exemption (Form No. 62-210.900(1)(a)3.)

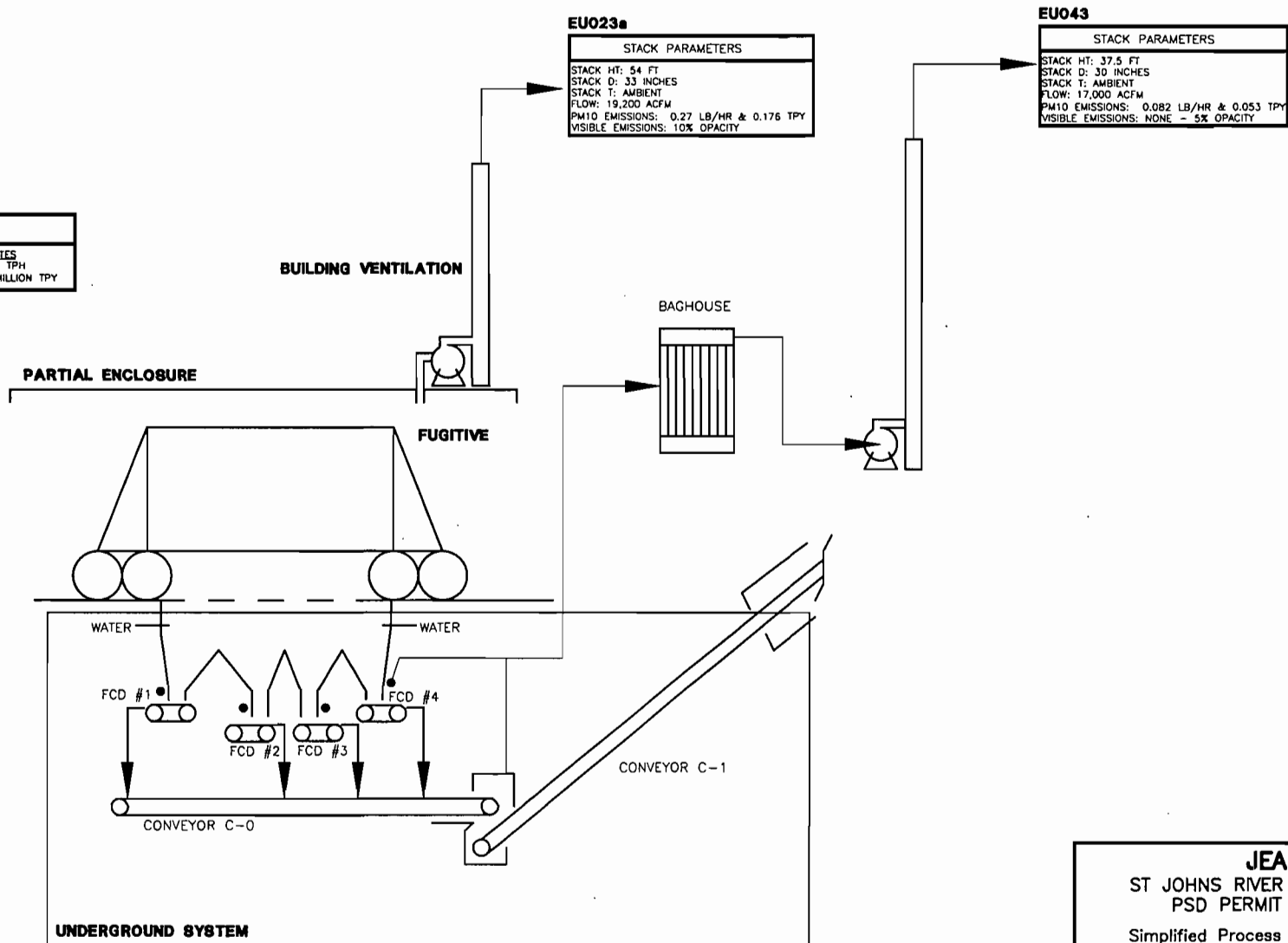
**EMISSIONS UNIT EU043**  
**Rotary Railcar Unloader, Fuel Transfer Points**

**ATTACHMENT EU043-01**  
**Process Flow Diagram**



# ST JOHNS RIVER POWER PARK ROTARY RAILCAR UNLOADER, FUEL TRANSFER POINTS (DC-1) ATTACHMENT EU043-01

| HANDLING RATES                  |
|---------------------------------|
| SURPP THROUGHPUT RATES          |
| UNLOADING RATE: 4,000 TPH       |
| COAL/PET. COKE: 5.2 MILLION TPY |



NOTE: COVERS ON CONVEYORS

|                                                                                                                         |          |     |              |
|-------------------------------------------------------------------------------------------------------------------------|----------|-----|--------------|
| <b>JEA</b><br>ST JOHNS RIVER POWERPARK<br>PSD PERMIT UPDATE<br>Simplified Process Flow Diagram<br>Emissions Unit ID 043 |          |     |              |
| <b>FOSTER WHEELER ENVIRONMENTAL CORPORATION</b>                                                                         |          |     |              |
| SCALE N/A                                                                                                               | PREPARED | DJG | CAD FILE NO. |
| DATE: 02/16/99                                                                                                          | CHECKED  | MAE | EU043PF.DWG  |
|                                                                                                                         | APPROVED | DJF | FIGURE NO.   |
|                                                                                                                         |          |     | EU043-01     |

**EMISSIONS UNIT EU043**  
**Rotary Railcar Unloader, Fuel Transfer Points**

**ATTACHMENT EU043-02**  
**Control Equipment Description**

**Emissions Unit EU043**

**Rotary Railcar Unloader, Fuel Transfer Points (DC-1)**

**Control Equipment Description**

**Control Equipment**

**Fabric Filter/Baghouse - Existing Equipment**

**Exhaust Parameters**

**Stack Height: 37.5 feet; Stack Diameter: 30 inches; Stack Exhaust Temperature: Ambient; and Stack Flow 17,000 ACFM**

**Reasonable Assurances**

**Emission Limitation - No Visible Emissions (5% Opacity)**

**See Attachment EU043-04, Compliance Test Report**

**EMISSIONS UNIT EU043**  
**Rotary Railcar Unloader, Fuel Transfer Points**

**ATTACHMENT EU043-03**  
**Stack Sampling Facilities Description**

## **STACK SAMPLING FACILITIES DESCRIPTION**

Pursuant to Rule 62-297.310(6), F.A.C. JEA will ensure that the required stack sampling facilities include sampling ports (Rule 62-297.310(6)(c), F.A.C.), work platforms (Rule 62-297.310(6)(d), F.A.C.), access to work platforms (Rule 62-297.310(6)(e), F.A.C.), electrical power (Rule 62-297.310(6)(f), F.A.C.), and sampling equipment support (Rule 62-297.310(6)(g), F.A.C.). All stack sampling facilities will meet any Occupational Safety and Health Administration (OSHA) Safety and Health Standards described in 29 CFR Part 1910, Subparts D and E.

In accordance with Rule 62-297.310(6)(b), F.A.C., JEA will use temporary stack sampling facilities for the existing units which are not required to conduct a compliance test on at least an annual basis may use. When electing to use temporary sampling facilities on an emissions unit, and the Department elects to test the unit, JEA will install the temporary facilities on the emissions unit within 5 days of a request by the Department. The temporary sampling facilities will remain on the emissions unit until the test is completed.

**EMISSIONS UNIT EU043**  
**Rotary Railcar Unloader, Fuel Transfer Points**

**ATTACHMENT EU043-04**  
**Compliance Test Report**

EPA

## VISIBLE EMISSION OBSERVATION FORM 1

 Measurement (Circle One)  
 Method g 200A 200B Other:

 Company Name  
ST. JAMES RIVER POWER PARK  
 Facility Name  
ST. JAMES RIVER POWER PARK  
 Street Address  
11201 NEW BERLIN ROAD  
 City JACKSONVILLE State FL Zip 32226

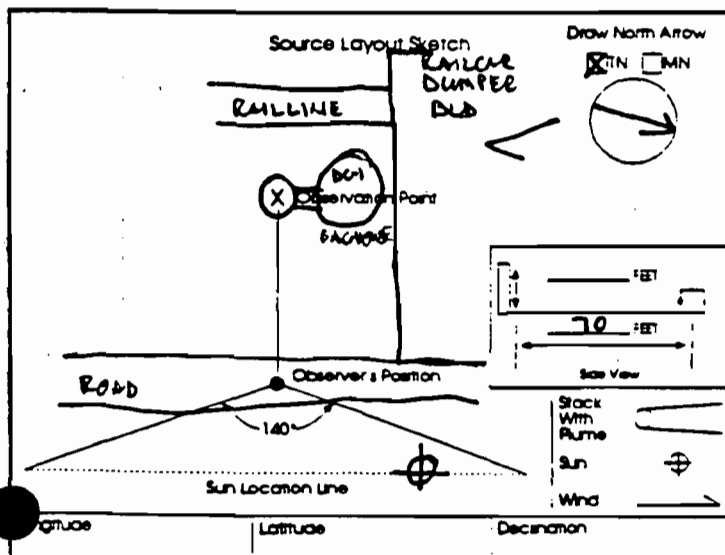
 Process RAILCAR COAL UNLOADING Unit # COM Operating Mode 2000 TPH  
 Control Equipment DC-1 DUST COLLECTOR Operating Mode 100% CAPACITY

 Describe Emission Point  
DC-1 DUST COLLECTOR EFFLUENT EXHAUST

 Height of Emiss. Pt.  
 Start 32' End 32' Height of Emiss. Pt. Rel. to Observer  
 Start 27' End 27'  
 Distance to Emiss. Pt.  
 Start 70' End 70' Direction to Emiss. Pt. (Degrees)  
 Start 256° End 256°

 Vertical Angle to Obs. Pt.  
 Start 14° End 14° Direction to Obs. Pt. (Degrees)  
 Start 256° End 256°  
 Distance and Direction to Observation Point from Emission Point  
 Start 1' ABOVE STACK - 0° End 1' ABOVE STACK 0°

 Describe Emissions  
 Start MOVE End MOVE  
 Emission Color  
 Start MOVE End MOVE Water Droplet Plume  
 Attached ☐ Detached ☐ None ☒

 Describe Plume Background  
 Start OPEN SKY End OPEN SKY  
 Background Color  
 Start GRAY End GRAY Sky Conditions  
 Start OVERCAST End OVERCAST  
 Wind Speed  
 Start 20-25 End 20-25 Wind Direction  
 Start 340° End 340°  
 Ambient Temp.  
 Start 53° End 54° Wet Bulb Temp.  
 Start 53° End 100% RH Percent

 Additional Information  
DIRECTIONS ESTIMATED - ECERRATIC COMPASS READINGS

 Form Number 00431 Page 1 of 2  
 Continued on VEO Form Number 00432

 Observation Date 5-1-99 Time Zone EDT Start Time 0730 End Time 0830

| Sec | 0 | 15 | 30 | 45 | Comments |
|-----|---|----|----|----|----------|
| 1   | 0 | 0  | 0  | 0  |          |
| 2   | 0 | 0  | 0  | 0  |          |
| 3   | 0 | 0  | 0  | 0  |          |
| 4   | 0 | 0  | 0  | 0  |          |
| 5   | 0 | 0  | 0  | 0  |          |
| 6   | 0 | 0  | 0  | 0  |          |
| 7   | 0 | 0  | 0  | 0  |          |
| 8   | 0 | 0  | 0  | 0  |          |
| 9   | 0 | 0  | 0  | 0  |          |
| 10  | 0 | 0  | 0  | 0  |          |
| 11  | 0 | 0  | 0  | 0  |          |
| 12  | 0 | 0  | 0  | 0  |          |
| 13  | 0 | 0  | 0  | 0  |          |
| 14  | 0 | 0  | 0  | 0  |          |
| 15  | 0 | 0  | 0  | 0  |          |
| 16  | 0 | 0  | 0  | 0  |          |
| 17  | 0 | 0  | 0  | 0  |          |
| 18  | 0 | 0  | 0  | 0  |          |
| 19  | 0 | 0  | 0  | 0  |          |
| 20  | 0 | 0  | 0  | 0  |          |
| 21  | 0 | 0  | 0  | 0  |          |
| 22  | 0 | 0  | 0  | 0  |          |
| 23  | 0 | 0  | 0  | 0  |          |
| 24  | 0 | 0  | 0  | 0  |          |
| 25  | 0 | 0  | 0  | 0  |          |
| 26  | 0 | 0  | 0  | 0  |          |
| 27  | 0 | 0  | 0  | 0  |          |
| 28  | 0 | 0  | 0  | 0  |          |
| 29  | 0 | 0  | 0  | 0  |          |
| 30  | 0 | 0  | 0  | 0  |          |

 Observer's Name (Print)  
MARK V. LOECHERT  
 Observer's Signature  
Mark V. Loechert Date 5/1/99  
 Organization  
ST. JAMES RIVER POWER PARK  
 Certified By  
EASTERN TECHNICAL ASSOCIATES Date 12/3/98

EPA

## VISIBLE EMISSION OBSERVATION FORM 1

Method Used (Circle One) Method 9 203A 203B Other: \_\_\_\_\_

Company Name  
ST. JOHNS RIVER POWER PARK

Facility Name  
ST. JOHNS RIVER POWER PARK

Street Address  
11201 NEW BERLIN ROAD

City State Zip  
JACKSONVILLE FL 32226

Process Unit # Operating Mode  
RAILCAR COAL UNLOADING COM

Control Equipment Operating Mode  
DC-1 DUST COLLECTOR 100% CAPACITY

Describe Emission Point  
DC-1 DUST COLLECTOR EFFLUENT EXHAUST

Height of Emiss. Pt. Height of Emiss. Pt. Rel. to Observer  
Start End Start End

Distance to Emiss. Pt. Direction to Emiss. Pt. (Degrees)  
Start End Start End

Vertical Angle to Obs. Pt. Direction to Obs. Pt. (Degrees)  
Start End Start End

Distance and Direction to Observation Point from Emission Point  
Start End

Describe Emissions  
Start End  
Emission Color Water Droplet Plume  
Start End Attached Detached None

Describe Plume Background  
Start End  
Background Color Sky Conditions  
Start End  
Wind Speed Wind Direction  
Start End  
Ambient Temp. Wet Bulb Temp. RH Percent  
Start End

Source Layout Sketch

Draw North Arrow  
☐ TN ☐ MN

Observer's Position

Observation Point

Sun Location Line

140°

Stack With Plume

Sun

Wind

Longitude Latitude Decimation

Additional Information

Form Number 00432 Page 2 of 2

Continued on VEO Form Number 00431

| Observation Date |   | Time Zone |    |    | Start time | End time |
|------------------|---|-----------|----|----|------------|----------|
| 5/1/99           |   | EST       |    |    | 0730       | 0830     |
| Sec<br>Min       | 0 | 15        | 30 | 45 | Comments   |          |
| 1                | 0 | 0         | 0  | 0  |            |          |
| 2                | 0 | 0         | 0  | 0  |            |          |
| 3                | 0 | 0         | 0  | 0  |            |          |
| 4                | 0 | 0         | 0  | 0  |            |          |
| 5                | 0 | 0         | 0  | 0  |            |          |
| 6                | 0 | 0         | 0  | 0  |            |          |
| 7                | 0 | 0         | 0  | 0  |            |          |
| 8                | 0 | 0         | 0  | 0  |            |          |
| 9                | 0 | 0         | 0  | 0  |            |          |
| 10               | 0 | 0         | 0  | 0  |            |          |
| 11               | 0 | 0         | 0  | 0  |            |          |
| 12               | 0 | 0         | 0  | 0  |            |          |
| 13               | 0 | 0         | 0  | 0  |            |          |
| 14               | 0 | 0         | 0  | 0  |            |          |
| 15               | 0 | 0         | 0  | 0  |            |          |
| 16               | 0 | 0         | 0  | 0  |            |          |
| 17               | 0 | 0         | 0  | 0  |            |          |
| 18               | 0 | 0         | 0  | 0  |            |          |
| 19               | 0 | 0         | 0  | 0  |            |          |
| 20               | 0 | 0         | 0  | 0  |            |          |
| 21               | 0 | 0         | 0  | 0  |            |          |
| 22               | 0 | 0         | 0  | 0  |            |          |
| 23               | 0 | 0         | 0  | 0  |            |          |
| 24               | 0 | 0         | 0  | 0  |            |          |
| 25               | 0 | 0         | 0  | 0  |            |          |
| 26               | 0 | 0         | 0  | 0  |            |          |
| 27               | 0 | 0         | 0  | 0  |            |          |
| 28               | 0 | 0         | 0  | 0  |            |          |
| 29               | 0 | 0         | 0  | 0  |            |          |
| 30               | 0 | 0         | 0  | 0  |            |          |

Observer's Name (Print)  
MARK K. LOECHTEL

Observer's Signature  
Mark K. Loechtel

Organization  
ST. JOHNS RIVER POWER PARK

Confirmed by  
EASTERN TECHNICAL ASSOCIATES

Date  
5/1/99

Date  
12/3/98



EPA

## VISIBLE EMISSION OBSERVATION FORM 1

Method Used (Circle One)  
Method 9 203A 203B Other \_\_\_\_\_

Company Name  
ST. JOHNS RIVER POWER PARK

Facility Name  
ST. JOHNS RIVER POWER PARK

Street Address  
11201 NEW BELLW ROAD

City  
JACKSONVILLE

State  
FL

Zip  
32226

Process  
RAILCAR COAL UNLOADING

Unit #  
COM

Operating Mode  
2000 TPH

Control Equipment  
WBT SUPPRESSION

Operating Mode  
100% CAPACITY

Describe Emission Point  
BUILDING VENTILATOR - STACK @ TOP OF BUILDING

Height of Emiss. Pt.  
Start 60' End 60'

Height of Emiss. Pt. Rel. to Observer  
Start 55' End 55'

Distance to Emiss. Pt.  
Start 75' End 75'

Direction to Emiss. Pt. (Degrees)  
Start 280° End 280°

Vertical Angle to Obs. Pt.  
Start 24° End 24°

Direction to Obs. Pt. (Degrees)  
Start 280° End 280°

Distance and Direction to Observation Point from Emission Point  
Start 1' ABOVE STACK - 0° End 1' ABOVE STACK - 0°

Describe Emissions  
Start NONE End NONE

Emission Color  
Start NONE End NONE

Water Droplet Plume  
Attached \_\_\_\_\_ Detached \_\_\_\_\_ None ☒

Describe Plume Background  
Start OPEN SKY End OPEN SKY

Background Color  
Start GRAY End GRAY

Wind Speed  
Start 20-25 End 20-25

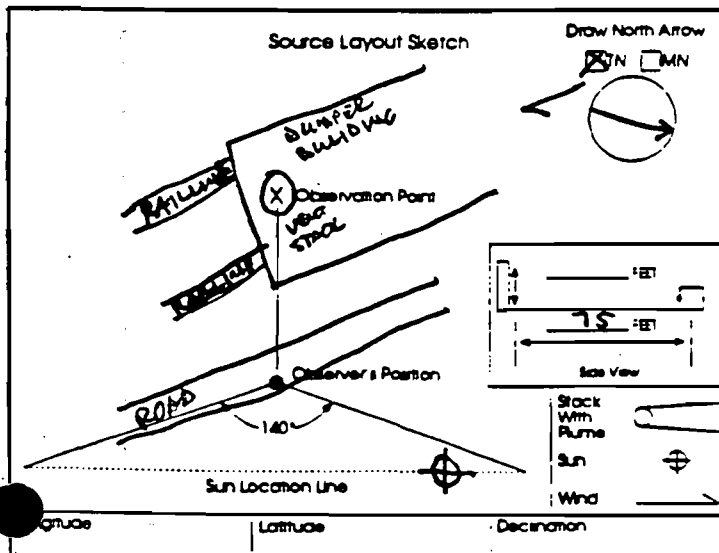
Ambient Temp  
Start 53° End 54°

Sky Conditions  
Start OVERCAST End OVERCAST

Wind Direction  
Start 340° End 340°

Wet Bulb Temp.  
Start 53° End 53°

RH Percent  
Start 100% End 100%



Additional Information  
DIRECTIONS ESTIMATED - BEARING COMPASS READINGS

Form Number 1023a1 Page 1 of 2

Continued on VEO Form Number 1023a2

| Observation Date |   | Time Zone |    |    | Start Time | End Time |
|------------------|---|-----------|----|----|------------|----------|
| 5-1-99           |   | EDT       |    |    | 0730       | 0830     |
| Sec<br>Min       | 0 | 15        | 30 | 45 | Comments   |          |
| 1                | 0 | 0         | 0  | 0  |            |          |
| 2                | 0 | 0         | 0  | 0  |            |          |
| 3                | 0 | 0         | 0  | 0  |            |          |
| 4                | 0 | 0         | 0  | 0  |            |          |
| 5                | 0 | 0         | 0  | 0  |            |          |
| 6                | 0 | 0         | 0  | 0  |            |          |
| 7                | 0 | 0         | 0  | 0  |            |          |
| 8                | 0 | 0         | 0  | 0  |            |          |
| 9                | 0 | 0         | 0  | 0  |            |          |
| 10               | 0 | 0         | 0  | 0  |            |          |
| 11               | 0 | 0         | 0  | 0  |            |          |
| 12               | 0 | 0         | 0  | 0  |            |          |
| 13               | 0 | 0         | 0  | 0  |            |          |
| 14               | 0 | 0         | 0  | 0  |            |          |
| 15               | 0 | 0         | 0  | 0  |            |          |
| 16               | 0 | 0         | 0  | 0  |            |          |
| 17               | 0 | 0         | 0  | 0  |            |          |
| 18               | 0 | 0         | 0  | 0  |            |          |
| 19               | 0 | 0         | 0  | 0  |            |          |
| 20               | 0 | 0         | 0  | 0  |            |          |
| 21               | 0 | 0         | 0  | 0  |            |          |
| 22               | 0 | 0         | 0  | 0  |            |          |
| 23               | 0 | 0         | 0  | 0  |            |          |
| 24               | 0 | 0         | 0  | 0  |            |          |
| 25               | 0 | 0         | 0  | 0  |            |          |
| 26               | 0 | 0         | 0  | 0  |            |          |
| 27               | 0 | 0         | 0  | 0  |            |          |
| 28               | 0 | 0         | 0  | 0  |            |          |
| 29               | 0 | 0         | 0  | 0  |            |          |
| 30               | 0 | 0         | 0  | 0  |            |          |

Observer's Name (Print)  
MARK K. LOECKELT

Observer's Signature  
Mark K. Loekelt

Organization  
ST. JOHNS RIVER POWER PARK

Confirmed by  
EASTERN TECHNICAL ASSOCIATES

Date  
5/1/99

Date  
12/3/98

EPA

## VISIBLE EMISSION OBSERVATION FORM 1

Method Used (Circle One) Method 9 203A 203B Other: \_\_\_\_\_

Company Name  
ST. JOHNS RIVER POWER PARK

Facility Name  
ST. JOHNS RIVER POWER PARK

Street Address  
11701 NEW BELLIN ROAD

City JACKSONVILLE State FL Zip 32226

Process RAILCAR COAL UNLOADING Unit # COM Operating Mode \_\_\_\_\_

Control Equipment WRT SUPPRESSION Operating Mode 100% CAPACITY

Describe Emission Point  
BUILDING VENTILATOR - STACK @ TOP OF BUILDING

Height of Emiss. Pt. \_\_\_\_\_ Height of Emiss. Pt. Rel. to Observer \_\_\_\_\_

Start \_\_\_\_\_ End \_\_\_\_\_ Start \_\_\_\_\_ End \_\_\_\_\_

Distance to Emiss. Pt. \_\_\_\_\_ Direction to Emiss. Pt. (Degrees) \_\_\_\_\_

Start \_\_\_\_\_ End \_\_\_\_\_ Start \_\_\_\_\_ End \_\_\_\_\_

Vertical Angle to Obs. Pt. \_\_\_\_\_ Direction to Obs. Pt. (Degrees) \_\_\_\_\_

Start \_\_\_\_\_ End \_\_\_\_\_ Start \_\_\_\_\_ End \_\_\_\_\_

Distance and Direction to Observation Point from Emission Point \_\_\_\_\_

Start \_\_\_\_\_ End \_\_\_\_\_

Describe Emissions

Start \_\_\_\_\_ End \_\_\_\_\_

Emission Color \_\_\_\_\_ Water Droplet Pume \_\_\_\_\_

Start \_\_\_\_\_ End \_\_\_\_\_ Attached ☐ Detached ☐ None ☐

Describe Pume Background

Start \_\_\_\_\_ End \_\_\_\_\_

Background Color \_\_\_\_\_ Sky Conditions \_\_\_\_\_

Start \_\_\_\_\_ End \_\_\_\_\_ Start \_\_\_\_\_ End \_\_\_\_\_

Wind Speed \_\_\_\_\_ Wind Direction \_\_\_\_\_

Start \_\_\_\_\_ End \_\_\_\_\_ Start \_\_\_\_\_ End \_\_\_\_\_

Ambient Temp. \_\_\_\_\_ Wet Bulb Temp. \_\_\_\_\_ RH Percent \_\_\_\_\_

Start \_\_\_\_\_ End \_\_\_\_\_

Source Layout Sketch

Draw North Arrow ☐ TN ☐ MN

Observer's Position

Observation Point

Sun Location Line

Longitude \_\_\_\_\_ Latitude \_\_\_\_\_ Declination \_\_\_\_\_

Additional Information

\_\_\_\_\_

Form Number 023a2 Page 2 of 2

Continued on VEO Form Number 023a1

| Observation Date | Time Zone | Start Time | End Time |    |
|------------------|-----------|------------|----------|----|
| Sec              | 0         | 15         | 30       | 45 |
| Min              |           |            |          |    |
| 1                | 0         | 0          | 0        | 0  |
| 2                | 0         | 0          | 0        | 0  |
| 3                | 0         | 0          | 0        | 0  |
| 4                | 0         | 0          | 0        | 0  |
| 5                | 0         | 0          | 0        | 0  |
| 6                | 0         | 0          | 0        | 0  |
| 7                | 0         | 0          | 0        | 0  |
| 8                | 0         | 0          | 0        | 0  |
| 9                | 0         | 0          | 0        | 0  |
| 10               | 0         | 0          | 0        | 0  |
| 11               | 0         | 0          | 0        | 0  |
| 12               | 0         | 0          | 0        | 0  |
| 13               | 0         | 0          | 0        | 0  |
| 14               | 0         | 0          | 0        | 0  |
| 15               | 0         | 0          | 0        | 0  |
| 16               | 0         | 0          | 0        | 0  |
| 17               | 0         | 0          | 0        | 0  |
| 18               | 0         | 0          | 0        | 0  |
| 19               | 0         | 0          | 0        | 0  |
| 20               | 0         | 0          | 0        | 0  |
| 21               | 0         | 0          | 0        | 0  |
| 22               | 0         | 0          | 0        | 0  |
| 23               | 0         | 0          | 0        | 0  |
| 24               | 0         | 0          | 0        | 0  |
| 25               | 0         | 0          | 0        | 0  |
| 26               | 0         | 0          | 0        | 0  |
| 27               | 0         | 0          | 0        | 0  |
| 28               | 0         | 0          | 0        | 0  |
| 29               | 0         | 0          | 0        | 0  |
| 30               | 0         | 0          | 0        | 0  |

Observer's Name (Print) MARK Y. LOECHLT

Observer's Signature Mark Y. Loechlt Date 5/1/99

Organization ST. JOHNS RIVER POWER PARK

Certified by EASTERN TECHNICAL ASSOCIATES Date 12/3/98

**EMISSIONS UNIT EU043**  
**Rotary Railcar Unloader, Fuel Transfer Points**

**ATTACHMENT EU043-05**  
**Emissions Estimates**

**Foster Wheeler Environmental Corporation**  
**EXCEL 7.0 Worksheet Calculation**

By: D. Graziani, P.E.  
 Date: 11/3/98  
 Ckd. By: Kim Evans, P.E.  
 Date: 11/10/98

Cal. No.: 901103DJG01  
 Project No.: 7830.0020.0056

Revision No.: 1

**Project:** St. Johns River Power Park PSD Permit Update  
**Subject:** Emissions Estimates for Rotary Railcar Unloader, Fuel Transfer Points (DC-1)

**Emissions Data**

| Raw Materials  | Constant | Belt Speed<br>(MPH) | H2O<br>(%) | Particle Size Multipliers |      |       | Emission Factors (lb/ton) |        |        |
|----------------|----------|---------------------|------------|---------------------------|------|-------|---------------------------|--------|--------|
|                |          |                     |            | PM                        | PM10 | PM2.5 | PM                        | PM10   | PM2.5  |
| Coal           | 0.0032   | 7.38                | 5          | 0.74                      | 0.35 | 0.11  | 0.0011                    | 0.0005 | 0.0002 |
| Petroleum Coke | 0.0032   | 7.38                | 5          | 0.74                      | 0.35 | 0.11  | 0.0011                    | 0.0005 | 0.0002 |

**Operating Data**

| Raw Materials  | Operating Rates |         |
|----------------|-----------------|---------|
|                | (TPH)           | (TPY)   |
| Coal           | 4000            | 5126352 |
| Petroleum Coke | 4000            | 5126352 |

**Emission Rates - Uncontrolled**

| Raw Materials  | Short-Term    |                 |                  |             |               |                |                   |
|----------------|---------------|-----------------|------------------|-------------|---------------|----------------|-------------------|
|                | PM<br>(lb/hr) | PM10<br>(lb/hr) | PM2.5<br>(lb/hr) | PM<br>(g/s) | PM10<br>(g/s) | PM2.5<br>(g/s) |                   |
| Coal           | 34.88         | 16.50           | 5.18             | 4.40        | 2.08          | 0.65           | 8 Transfer Points |
| Petroleum Coke | 34.88         | 16.50           | 5.18             | 4.40        | 2.08          | 0.65           | 8 Transfer Points |

**Emission Rates - Controlled 99.50%**

| Raw Materials  | Short-Term    |                 |                  |             |               |                |
|----------------|---------------|-----------------|------------------|-------------|---------------|----------------|
|                | PM<br>(lb/hr) | PM10<br>(lb/hr) | PM2.5<br>(lb/hr) | PM<br>(g/s) | PM10<br>(g/s) | PM2.5<br>(g/s) |
| Coal           | 0.174         | 0.082           | 0.026            | 0.0220      | 0.0104        | 0.0033         |
| Petroleum Coke | 0.174         | 0.082           | 0.026            | 0.0220      | 0.0104        | 0.0033         |

**Emission Rates - Uncontrolled**

| Raw Materials  | Long-Term   |               |                |             |               |                |                   |
|----------------|-------------|---------------|----------------|-------------|---------------|----------------|-------------------|
|                | PM<br>(TPY) | PM10<br>(TPY) | PM2.5<br>(TPY) | PM<br>(g/s) | PM10<br>(g/s) | PM2.5<br>(g/s) |                   |
| Coal           | 22.35       | 10.57         | 3.32           | 0.643       | 0.304         | 0.096          | 8 Transfer Points |
| Petroleum Coke | 22.35       | 10.57         | 3.32           | 0.643       | 0.304         | 0.096          | 8 Transfer Points |

**Emission Rates - Controlled 99.50%**

| Raw Materials  | Long-Term   |               |                |             |               |                |
|----------------|-------------|---------------|----------------|-------------|---------------|----------------|
|                | PM<br>(TPY) | PM10<br>(TPY) | PM2.5<br>(TPY) | PM<br>(g/s) | PM10<br>(g/s) | PM2.5<br>(g/s) |
| Coal           | 0.1117      | 0.0529        | 0.0166         | 0.00322     | 0.00152       | 0.00048        |
| Petroleum Coke | 0.1117      | 0.0529        | 0.0166         | 0.00322     | 0.00152       | 0.00048        |

**References:**

Emission Factor - AP42 Chapter 13.2.4 Aggregate Handling and Storage Piles  
 Belt Speed - JEA Operation Data  
 Moisture Contents - JEA Operational Data  
 Transfer Rates - JEA Operational Data

### III. EMISSIONS UNIT INFORMATION

#### A. TYPE OF EMISSIONS UNIT (Regulated and Unregulated Emissions Units)

Emissions Unit Information Section 3

SJRPP - Fuel Handling Building (DC-3)

#### Type of Emissions Unit Addressed in This Section

1. Regulated or Unregulated Emissions Unit? Check one :

- ☒ [ X ] 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.

2. Single Process, Group of Processes, or Fugitive Only? 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).
- ☒ [ X ] 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.

III. Part 1 - 1

**B. GENERAL EMISSIONS UNIT INFORMATION**  
(Regulated and Unregulated Emissions Units)**Emissions Unit Description and Status**

|                                                                                                                                                                                             |                                      |                                                |
|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------------------|------------------------------------------------|
| 1. Description of Emissions Unit Addressed in This Section :<br><br>SJRPP - Fuel Handling Building (DC-3)                                                                                   |                                      |                                                |
| 2. Emissions Unit Identification Number : 046<br>[ ] No Corresponding ID [ ] Unknown                                                                                                        |                                      |                                                |
| 3. Emissions Unit Status<br>Code : A                                                                                                                                                        | 4. Acid Rain Unit?<br>[ ] Yes [X] No | 5. Emissions Unit Major<br>Group SIC Code : 49 |
| 6. Emissions Unit Comment :<br><br>This emissions unit consists of eight (8) transfer points, a sampling train, and the crushing operations, and is controlled by a dust collection system. |                                      |                                                |

**Emissions Unit Information Section**

3

SJRPP - Fuel Handling Building (DC-3)

**Emissions Unit Control Equipment**

1

1. Description :

Emissions are controlled by use of a baghouse.

2. Control Device or Method Code :

18

**C. EMISSIONS UNIT DETAIL INFORMATION**  
(Regulated Emissions Units Only)

**Emissions Unit Information Section**  
SJRPP - Fuel Handling Building (DC-3)

3

**Emissions Unit Details**

|                                                                                                              |                                                     |
|--------------------------------------------------------------------------------------------------------------|-----------------------------------------------------|
| 1. Initial Startup Date :                                                                                    | 06-Aug-1988                                         |
| 2. Long-term Reserve Shutdown Date :                                                                         |                                                     |
| 3. Package Unit :<br>Manufacturer :                                                                          | Model Number :                                      |
| 4. Generator Nameplate Rating :                                                                              | MW                                                  |
| 5. Incinerator Information :<br>Dwell Temperature :<br>Dwell Time :<br>Incinerator Afterburner Temperature : | Degrees Fahrenheit<br>Seconds<br>Degrees Fahrenheit |

**Emissions Unit Operating Capacity**

|                                                                                                                                                                                                                                |       |          |
|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------|----------|
| 1. Maximum Heat Input Rate :                                                                                                                                                                                                   | 0     | mmBtu/hr |
| 2. Maximum Incinerator Rate :                                                                                                                                                                                                  | lb/hr | tons/day |
| 3. Maximum Process or Throughput Rate :                                                                                                                                                                                        | 4000  | tons/hr  |
| 4. Maximum Production Rate :                                                                                                                                                                                                   |       |          |
| 5. Operating Capacity Comment :<br>Maximum rate is set by Conveyor C-2. Conveyors C-3 and C-4 feed to the Fuel Handling Building at a Maximum Rate of 2,000 TPH. Emission estimates assumed 4,000 TPH for all Transfer Points. |       |          |

**Emissions Unit Operating Schedule**

|                                        |                  |
|----------------------------------------|------------------|
| Requested Maximum Operating Schedule : |                  |
| 24 hours/day                           | 7 days/week      |
| 52 weeks/year                          | 8,760 hours/year |





**D. EMISSIONS UNIT REGULATIONS**  
**(Regulated Emissions Units Only)**

**Emissions Unit Information Section**      3  
SJRPP - Fuel Handling Building (DC-3)

**Rule Applicability Analysis**

Unit was subject to PSD Review including the application of BACT and is also subject to 40 CFR Part 60, Subpart Y - Standards of Performance for Coal Preparation Plants while processing coal.

III. Part 6a - 1

**List of Applicable Regulations**

Rule 62-210.700(1), (4), & (6), F.A.C., Excess Emissions

Rule 62-297.310, F.A.C., General Test Requirements

40 CFR Part 60, Subpart Y, Standards of Performance for Coal Preparation Plants

60 CFR Part 60.250 (a), Applicability and Designation of Affected Facility

40 CFR Part 60.252 (c), Standards for Particulate Matter

40 CFR Part 60.254(b)(2), Test Methods and Procedures

Rule 62-204.800(7)(c), F.A.C., NSPS Controlling Standards

Rule 62-204.800(7)(d), F.A.C., Adoption of the General Provisions (As Noted)

Rule 62-204.800(7)(e), F.A.C., Adoption of the NSPS Appendices (As Noted)

Rule 62-210.300(1), F.A.C., Air Construction Permit

Rule 62-210.550, F.A.C., Stack Height Policy

Rule 62-297.401 (5) & (9)(c), F.A.C., EPA Methods 5 and 9, 40 CFR Part 60, Appendix A

Jacksonville Environmental Protection Board, Rule 2 - Air Pollution (As Noted)

III. Part 6b - 1

DEP Form No. 62-210.900(1) - Form  
Effective : 3-21-96

**List of Applicable Regulations**

Rule 2.201, Adoption of Chapter 62-204, F.A.C., (As Noted)

Rule 2.301, Adoption of Chapter 62-210, F.A.C., (As Noted)

Rule 2.1101, Adoption of Chapter 62-297, F.A.C., (As Noted)

Rule 2.105, Maintenance of Air Pollution Control Devices

40 CFR Part 60.7, Notification and Recordkeeping

40 CFR Part 60.8, Performance Tests

40 CFR Part 60.11, Compliance with Standards and Maintenance Requirements

40 CFR Part 60.12, Circumvention

40 CFR Part 60.13, Monitoring Requirements

40 CFR Part 60.19, General Notifications and Reporting Requirements

Rule 62-204.800(7)(b).31, F.A.C., Adoption of 40 CFR Part 60 Subpart Y

Rule 62-210.650, F.A.C., Circumvention

Rule 62-210.300(5), F.A.C., Notification of Start-up

**III. Part 6b - 2**

DEP Form No. 62-210.900(1) - Form  
Effective : 3-21-96

**Emissions Unit Information Section**  
SJRPP - Fuel Handling Building (DC-3)

3

**List of Applicable Regulations**

III. Part 6b - 3

DEP Form No. 62-210.900(1) - Form  
Effective : 3-21-96

## E. EMISSION POINT (STACK/VENT) INFORMATION

Emissions Unit Information Section      3

SJRPP - Fuel Handling Building (DC-3)

Emission Point Description and Type :

|                                                                                                                            |                                                                                                       |
|----------------------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------|
| 1. Identification of Point on Plot Plan or Flow Diagram :                                                                  | DC-3                                                                                                  |
| 2. Emission Point Type Code :                                                                                              | 2                                                                                                     |
| 3. Descriptions of Emission Points Comprising this Emissions Unit for VE Tracking :<br>(limit to 100 characters per point) |                                                                                                       |
| 4. ID Numbers or Descriptions of Emission Units with this Emission Point in Common :                                       | The Fuel Handling Building includes a dust collection system with pickups at several transfer points. |
| 5. Discharge Type Code :                                                                                                   | H                                                                                                     |
| 6. Stack Height :                                                                                                          | 192 feet                                                                                              |
| 7. Exit Diameter :                                                                                                         | 2.8 feet                                                                                              |
| 8. Exit Temperature :                                                                                                      | 68 °F                                                                                                 |
| 9. Actual Volumetric Flow Rate :                                                                                           | 30700 acfm                                                                                            |
| 10. Percent Water Vapor :                                                                                                  | 2.00 %                                                                                                |
| 11. Maximum Dry Standard Flow Rate :                                                                                       | 30700 dscfm                                                                                           |
| 12. Nonstack Emission Point Height :                                                                                       | 0 feet                                                                                                |
| 13. Emission Point UTM Coordinates :                                                                                       |                                                                                                       |
| Zone : 17                                                                                                                  | East (km) : 447.068 North (km) : 3366.433                                                             |
| 14. Emission Point Comment :                                                                                               |                                                                                                       |

III. Part 7a - 1

DEP Form No. 62-210.900(1) - Form  
Effective : 3-21-96

## F. SEGMENT (PROCESS/FUEL) INFORMATION

Emissions Unit Information Section 3

SJRPP - Fuel Handling Building (DC-3)

**Segment Description and Rate :** Segment 1

|                                                                                               |                                       |
|-----------------------------------------------------------------------------------------------|---------------------------------------|
| 1. Segment Description (Process/Fuel Type and Associated Operating Method/Mode) :<br><br>Coal |                                       |
| 2. Source Classification Code (SCC) : 30501099                                                |                                       |
| 3. SCC Units : Tons Processed                                                                 |                                       |
| 4. Maximum Hourly Rate : 4,000.00                                                             | 5. Maximum Annual Rate : 5,126,000.00 |
| 6. Estimated Annual Activity Factor : 0.00                                                    |                                       |
| 7. Maximum Percent Sulfur :                                                                   | 8. Maximum Percent Ash :              |
| 9. Million Btu per SCC Unit :                                                                 |                                       |
| 10. Segment Comment :                                                                         |                                       |

III. Part 8 - 1

## F. SEGMENT (PROCESS/FUEL) INFORMATION

Emissions Unit Information Section 3

SJRPP - Fuel Handling Building (DC-3)

**Segment Description and Rate :** Segment 2

|                                                                                                         |                                       |
|---------------------------------------------------------------------------------------------------------|---------------------------------------|
| 1. Segment Description (Process/Fuel Type and Associated Operating Method/Mode) :<br><br>Petroleum Coke |                                       |
| 2. Source Classification Code (SCC) : 30501099                                                          |                                       |
| 3. SCC Units : Tons Processed                                                                           |                                       |
| 4. Maximum Hourly Rate : 4,000.00                                                                       | 5. Maximum Annual Rate : 5,126,000.00 |
| 6. Estimated Annual Activity Factor : 0.00                                                              |                                       |
| 7. Maximum Percent Sulfur :                                                                             | 8. Maximum Percent Ash :              |
| 9. Million Btu per SCC Unit :                                                                           |                                       |
| 10. Segment Comment :                                                                                   |                                       |

III. Part 8 - 2

DEP Form No. 62-210.900(1) - Form  
Effective : 3-21-96



**G. EMISSIONS UNIT POLLUTANTS**  
**(Regulated and Unregulated Emissions Units)**

**Emissions Unit Information Section**     3

SJRPP - Fuel Handling Building (DC-3)

| 1. Pollutant Emitted | 2. Primary Control Device Code | 3. Secondary Control Device Code | 4. Pollutant Regulatory Code |
|----------------------|--------------------------------|----------------------------------|------------------------------|
| 1 - PM               | 018                            |                                  | EL                           |
| 2 - PM10             | 018                            |                                  | EL                           |

III. Part 9a - 1

DEP Form No. 62-210.900(1) - Form  
Effective : 3-21-96

**H. EMISSIONS UNIT POLLUTANT DETAIL INFORMATION**  
**(Regulated Emissions Units Only - Emissions Limited Pollutants Only)**

**Emissions Unit Information Section**      3  
SJRPP - Fuel Handling Building (DC-3)

**Pollutant Potential/Estimated Emissions :**      Pollutant      1

|                                                                   |                     |                                 |
|-------------------------------------------------------------------|---------------------|---------------------------------|
| 1. Pollutant Emitted : <b>PM</b>                                  |                     |                                 |
| 2. Total Percent Efficiency of Control :                          | 99.50               | %                               |
| 3. Potential Emissions :                                          | 0.2370000 lb/hour   | 0.1520000 tons/year             |
| 4. Synthetically Limited?<br>[   ] Yes                    [X ] No |                     |                                 |
| 5. Range of Estimated Fugitive/Other Emissions:                   |                     | to                    tons/year |
| 6. Emissions Factor                                               | 0                   | Units lb/ton                    |
| Reference                                                         | AP-42, (EF=0.00148) |                                 |
| 7. Emissions Method Code :                                        | 3                   |                                 |
| 8. Calculations of Emissions :<br><br>See Attachment EU046-05     |                     |                                 |
| 9. Pollutant Potential/Estimated Emissions Comment :              |                     |                                 |

III. Part 9b - 1

**H. EMISSIONS UNIT POLLUTANT DETAIL INFORMATION**  
**(Regulated Emissions Units Only - Emissions Limited Pollutants Only)**

**Emissions Unit Information Section**      3

SJRPP - Fuel Handling Building (DC-3)

**Pollutant Potential/Estimated Emissions :**      Pollutant      2

|                                                                                                                                                                  |                   |                     |
|------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------|---------------------|
| 1. Pollutant Emitted : <b>PM10</b>                                                                                                                               |                   |                     |
| 2. Total Percent Efficiency of Control :                                                                                                                         | 99.50             | %                   |
| 3. Potential Emissions :                                                                                                                                         | 0.1120000 lb/hour | 0.0720000 tons/year |
| 4. Synthetically Limited?<br>[   ] Yes                    [X ] No                                                                                                |                   |                     |
| 5. Range of Estimated Fugitive/Other Emissions:<br><div style="text-align: right; margin-right: 100px;">to</div> <div style="text-align: right;">tons/year</div> |                   |                     |
| 6. Emissions Factor                                                                                                                                              | 0                 | Units lb/ton        |
| Reference    AP-42, (EF=0.0007)                                                                                                                                  |                   |                     |
| 7. Emissions Method Code :      3                                                                                                                                |                   |                     |
| 8. Calculations of Emissions :<br><br>See Attachment EU046-05                                                                                                    |                   |                     |
| 9. Pollutant Potential/Estimated Emissions Comment :                                                                                                             |                   |                     |

**Emissions Unit Information Section**      3  
SJRPP - Fuel Handling Building (DC-3)

**Pollutant Information Section**      1

**Allowable Emissions**      1

|                                                                                     |                                                                                                    |                 |                |
|-------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------|-----------------|----------------|
| 1. Basis for Allowable Emissions Code :                                             | OTHER                                                                                              |                 |                |
| 2. Future Effective Date of Allowable Emissions :                                   | 01-Aug-1999                                                                                        |                 |                |
| 3. Requested Allowable Emissions and Units :                                        | 5.00                                                                                               | Percent Opacity |                |
| 4. Equivalent Allowable Emissions :                                                 | 0.24                                                                                               | lb/hour         | 0.15 tons/year |
| 5. Method of Compliance :                                                           | Stack Test Waiver Requested Rule 62-297.310(7)(c), F.A.C.                                          |                 |                |
| 6. Pollutant Allowable Emissions Comment (Desc. of Related Operating Method/Mode) : | Updated BACT revised from 10% opacity to a requested no visible emissions limitation (5% Opacity). |                 |                |

III. Part 9c - 1

**Emissions Unit Information Section**      3  
SJRPP - Fuel Handling Building (DC-3)

**Pollutant Information Section**      2

**Allowable Emissions**      1

|                                                                                     |                                                                                                    |                 |                |
|-------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------|-----------------|----------------|
| 1. Basis for Allowable Emissions Code :                                             | OTHER                                                                                              |                 |                |
| 2. Future Effective Date of Allowable Emissions :                                   | 01-Aug-1999                                                                                        |                 |                |
| 3. Requested Allowable Emissions and Units :                                        | 5.00                                                                                               | percent opacity |                |
| 4. Equivalent Allowable Emissions :                                                 | 0.11                                                                                               | lb/hour         | 0.07 tons/year |
| 5. Method of Compliance :                                                           | Stack Test Waiver Requested Rule 62-297.310(7)(c), F.A.C.                                          |                 |                |
| 6. Pollutant Allowable Emissions Comment (Desc. of Related Operating Method/Mode) : | Updated BACT revised from 10% opacity to a requested no visible emissions limitation (5% Opacity). |                 |                |

III. Part 9c - 2

**I. VISIBLE EMISSIONS INFORMATION**  
**(Regulated Emissions Units Only)**

**Emissions Unit Information Section**     3  
SJRPP - Fuel Handling Building (DC-3)

**Visible Emissions Limitation :** Visible Emissions Limitation     1

|                                                                                                                                                                                                                                                                                                                                                                                                                                       |
|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 1. Visible Emissions Subtype :                      05                                                                                                                                                                                                                                                                                                                                                                                |
| 2. Basis for Allowable Opacity :                      OTHER                                                                                                                                                                                                                                                                                                                                                                           |
| 3. Requested Allowable Opacity :<br><div style="text-align: right; margin-right: 50px;">Normal Conditions :                      5                      %</div> <div style="text-align: right; margin-right: 50px;">Exceptional Conditions :                      100                      %</div> <div style="text-align: right; margin-right: 50px;">Maximum Period of Excess Opacity Allowed :                      min/hour</div> |
| 4. Method of Compliance :<br><br>Annual EPA Method 9                                                                                                                                                                                                                                                                                                                                                                                  |
| 5. Visible Emissions Comment :<br><br>Updated BACT revised from 10% opacity to a requested no visible emissions limitation (5% Opacity).<br><br>Maximum Period 2 hours in any 24-hour period                                                                                                                                                                                                                                          |

**J. CONTINUOUS MONITOR INFORMATION**  
**(Regulated Emissions Units Only)**

**Emissions Unit Information Section**

III. Part 11 - 1

DEP Form No. 62-210.900(1) - Form  
Effective : 3-21-96

## K. PREVENTION OF SIGNIFICANT DETERIORATION (PSD) INCREMENT TRACKING INFORMATION

Emissions Unit Information Section 3

SJRPP - Fuel Handling Building (DC-3)

### PSD Increment Consumption Determination

#### 1. Increment Consuming for Particulate Matter or Sulfur Dioxide?

- ☐ The emissions unit is undergoing PSD review as part of this application, or has undergone PSD review previously, for particulate matter or sulfur dioxide. If so, emissions unit consumes increment.
- ☐ The facility addressed in this application is classified as an EPA major source pursuant to paragraph (c) of the definition of "major source of air pollution" in Chapter 62-213, F.A.C., and the emissions unit addressed in this section commenced (or will commence) construction after January 6, 1975. If so, baseline emissions are zero, and emissions unit consumes increment.
- ☐ The facility addressed in this application is classified as an EPA major source, and the emissions unit began initial operation after January 6, 1975, but before December 27, 1977. If so, baseline emissions are zero, and emissions unit consumes increment.
- ☒ For any facility, the emissions unit began (or will begin) initial operation after December 27, 1977. If so, baseline emissions are zero, and emissions unit consumes increment.
- ☐ None of the above apply. If so, the baseline emissions of the emissions unit are nonzero. In such case, additional analysis, beyond the scope of this application, is needed to determine whether changes in emissions have occurred (or will occur) after the baseline date that may consume or expand increment.



## 2. Increment Consuming for Nitrogen Dioxide?

- ☐ The emissions unit addressed in this section is undergoing PSD review as part of this application, or has undergone PSD review previously, for nitrogen dioxide. If so, emissions unit consumes increment.
- ☐ The facility addressed in this application is classified as an EPA major source pursuant to paragraph (c) of the definition of "major source of air pollution" in Chapter 62-213, F.A.C., and the emissions unit addressed in this section commenced (or will commence) construction after February 8, 1988. If so, baseline emissions are zero, and emissions unit consumes increment.
- ☐ The facility addressed in this application is classified as an EPA major source, and the emissions unit began initial operation after February 8, 1988, but before March 28, 1988. If so, baseline emissions are zero, and emissions unit consumes increment.
- ☐ For any facility, the emissions unit began (or will begin) initial operation after March 28, 1988. If so, baseline emissions are zero, and emissions unit consumes increment.
- ☐ None of the above apply. If so, baseline emissions of the emissions unit are nonzero. In such case, additional analysis, beyond the scope of this application, is needed to determine whether changes in emissions have occurred (or will occur) after the baseline date that may consume or expand increment.

### 3. Increment Consuming/Expanding Code :

PM : C

SO2 : U

NO2 : U

### 4. Baseline Emissions :

PM : 0.0000 lb/hour

0.0000 tons/year

SO2 : lb/hour

tons/year

NO2 :

tons/year

### 5. PSD Comment :

Item 4 values present increment consumption values

## III. Part 12 - 2

## L. EMISSIONS UNIT SUPPLEMENTAL INFORMATION

Emissions Unit Information Section 3

SJRPP - Fuel Handling Building (DC-3)

### Supplemental Requirements for All Applications

|                                                                   |          |
|-------------------------------------------------------------------|----------|
| 1. Process Flow Diagram :                                         | EU046-01 |
| 2. Fuel Analysis or Specification :                               | NA       |
| 3. Detailed Description of Control Equipment :                    | EU046-02 |
| 4. Description of Stack Sampling Facilities :                     | EU046-03 |
| 5. Compliance Test Report :                                       | EU046-04 |
| 6. Procedures for Startup and Shutdown :                          | NA       |
| 7. Operation and Maintenance Plan :                               | NA       |
| 8. Supplemental Information for Construction Permit Application : | EU046-05 |
| 9. Other Information Required by Rule or Statute :                | NA       |

### Additional Supplemental Requirements for Category I Applications Only

|                                                          |
|----------------------------------------------------------|
| 10. Alternative Methods of Operations :                  |
| 11. Alternative Modes of Operation (Emissions Trading) : |

III. Part 13 - 1

12. Identification of Additional Applicable Requirements :

13. Compliance Assurance Monitoring  
Plan :

14. Acid Rain Application (Hard-copy Required) :

Acid Rain Part - Phase II (Form No. 62-210.900(1)(a))

Repowering Extension Plan (Form No. 62-210.900(1)(a)1.)

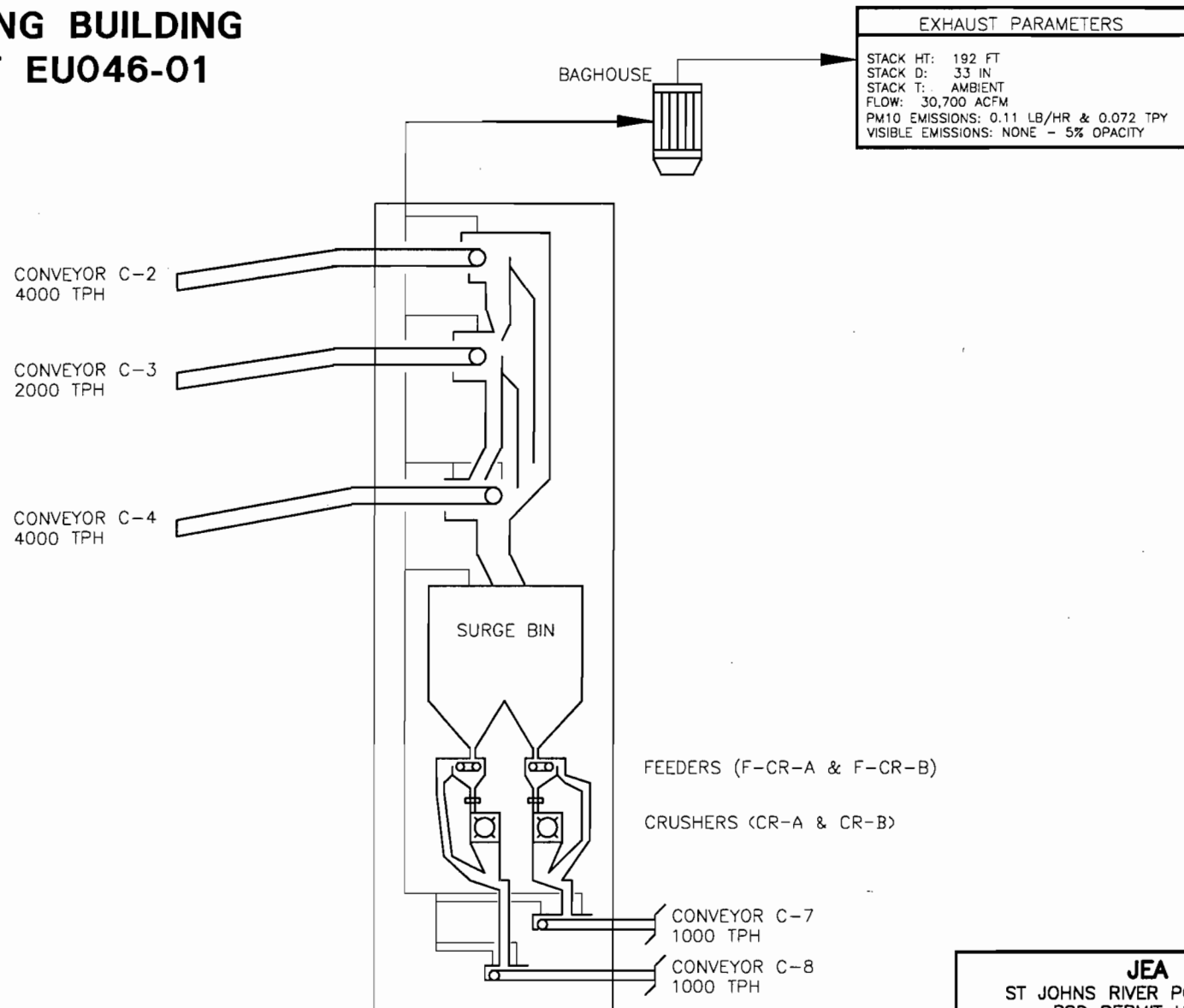
New Unit Exemption (Form No. 62-210.900(1)(a)2.)

Retired Unit Exemption (Form No. 62-210.900(1)(a)3.)

**EMISSIONS UNIT EU046**  
**Fuel Handling Building (DC-3)**

**ATTACHMENT EU046-01**  
**Process Flow Diagram**

# ST JOHNS RIVER POWER PARK FUEL HANDLING BUILDING ATTACHMENT EU046-01



**JEA**  
ST JOHNS RIVER POWER PARK  
PSD PERMIT UPDATE

Simplified Process Flow Diagram  
Emissions Unit ID 046

**FOSTER WHEELER ENVIRONMENTAL CORPORATION**

|                |              |                             |
|----------------|--------------|-----------------------------|
| SCALE N/A      | PREPARED DJG | CAD FILE NO.<br>EU046PF.DWG |
| DATE: 02/16/99 | CHECKED MAE  | FIGURE NO.<br>EU046-01      |
|                | APPROVED DJF |                             |

**EMISSIONS UNIT EU046**  
**Fuel Handling Building (DC-3)**

**ATTACHMENT EU046-02**  
**Control Equipment Description**

**Emissions Unit EU046**  
**SJRPP - Fuel Handling Building (DC-3)**  
**Control Equipment Description**

|                              |                                                                                                                          |
|------------------------------|--------------------------------------------------------------------------------------------------------------------------|
| <b>Control Equipment</b>     | <b>Fabric Filter/Baghouse - Existing Equipment</b>                                                                       |
| <b>Exhaust Parameters</b>    | <b>Stack Height: 192 feet; Stack Diameter: 33 inches; Stack Exhaust Temperature: Ambient; and Stack Flow 30,700 ACFM</b> |
| <b>Reasonable Assurances</b> | <b>Emission Limitation - No Visible Emissions (5% Opacity)</b><br><b>See Attachment EU046-04, Compliance Test Report</b> |

**EMISSIONS UNIT EU046**  
**Fuel Handling Building (DC-3)**

**ATTACHMENT EU046-03**  
**Stack Sampling Facilities Description**



## **STACK SAMPLING FACILITIES DESCRIPTION**

Pursuant to Rule 62-297.310(6), F.A.C. JEA will ensure that the required stack sampling facilities include sampling ports (Rule 62-297.310(6)(c), F.A.C.), work platforms (Rule 62-297.310(6)(d), F.A.C.), access to work platforms (Rule 62-297.310(6)(e), F.A.C.), electrical power (Rule 62-297.310(6)(f), F.A.C.), and sampling equipment support (Rule 62-297.310(6)(g), F.A.C.). All stack sampling facilities will meet any Occupational Safety and Health Administration (OSHA) Safety and Health Standards described in 29 CFR Part 1910, Subparts D and E.

In accordance with Rule 62-297.310(6)(b), F.A.C., JEA will use temporary stack sampling facilities for the existing units which are not required to conduct a compliance test on at least an annual basis may use. When electing to use temporary sampling facilities on an emissions unit, and the Department elects to test the unit, JEA will install the temporary facilities on the emissions unit within 5 days of a request by the Department. The temporary sampling facilities will remain on the emissions unit until the test is completed.

**EMISSIONS UNIT EU046**  
**Fuel Handling Building (DC-3)**

**ATTACHMENT EU046-04**  
**Compliance Test Report**

EPA

## VISIBLE EMISSION OBSERVATION FORM 1

|                          |      |      |              |
|--------------------------|------|------|--------------|
| Method Used (Circle One) | 203A | 203B | Other: _____ |
| Method 9                 |      |      |              |

|                |                            |       |  |
|----------------|----------------------------|-------|--|
| Company Name   | St. Johns River Power Park |       |  |
| Facility Name  | St Johns River Power Park. |       |  |
| Street Address | 11201 New Berlin Rd.       |       |  |
| City           | State                      | Zip   |  |
| Jacksonville   | FL                         | 32226 |  |

|                        |                |                |
|------------------------|----------------|----------------|
| Process                | Unit #         | Operating Mode |
| Fuel Handling Building | COM            | 540 TPH.       |
| Control Equipment      | Operating Mode |                |
| DC-3 Baghouse.         | 100% CAP.      |                |

|                                                              |                                       |
|--------------------------------------------------------------|---------------------------------------|
| Describe Emission Point                                      |                                       |
| DC-3 Baghouse Effluent while loading coal/Pet coke to Boiler |                                       |
| Height of Emiss. Pt.                                         | Height of Emiss. Pt. Rel. to Observer |
| Start 197' End 197'                                          | Start 5' End 5'                       |
| Distance to Emiss. Pt.                                       | Direction to Emiss. Pt. (Degrees)     |
| Start 20' End 20'                                            | Start 266° End 266°                   |

|                                                                 |                                 |
|-----------------------------------------------------------------|---------------------------------|
| Vertical Angle to Obs. Pt.                                      | Direction to Obs. Pt. (Degrees) |
| Start 5° End 6°                                                 | Start 258° End 258°             |
| Distance and Direction to Observation Point from Emission Point |                                 |
| Start 10' - 180°                                                | End 10' - 180°                  |

|                     |                                                                                                              |
|---------------------|--------------------------------------------------------------------------------------------------------------|
| Describe Emissions  |                                                                                                              |
| Start NONE.         | End NONE.                                                                                                    |
| Emission Color      | Water Droplet Plume                                                                                          |
| Start NONE End NONE | Attached <input type="checkbox"/> Detached <input type="checkbox"/> None <input checked="" type="checkbox"/> |

|                           |                       |
|---------------------------|-----------------------|
| Describe Plume Background |                       |
| Start OPEN SKY            | End OPEN SKY          |
| Background Color          | Sky Conditions        |
| Start BLUE/HAZY End BAC   | Start CLEAR End clear |
| Wind Speed                | Wind Direction        |
| Start 5-10 End 5-10       | Start S End S         |
| Ambient Temp.             | Wet Bulb Temp.        |
| Start 86°F End 88°F       | Start 81°F End 80%    |

|                                  |          |                                                         |
|----------------------------------|----------|---------------------------------------------------------|
| Source Layout Sketch             |          | Draw North Arrow                                        |
|                                  |          | <input type="checkbox"/> TN <input type="checkbox"/> MN |
| 197 FEET<br>20 FEET<br>Side View |          | Stack With Plume<br>Sun<br>Wind                         |
| Longitude                        | Latitude | Destination                                             |

|                        |
|------------------------|
| Additional Information |
|                        |

|                              |      |      |        |
|------------------------------|------|------|--------|
| Form Number                  | 0461 | Page | 1 of 2 |
| Continued on VEO Form Number |      | 0462 |        |

|                  |           |            |          |    |          |
|------------------|-----------|------------|----------|----|----------|
| Observation Date | Time Zone | Start Time | End Time |    |          |
| 5/6/99           |           | 1000       | 1100     |    |          |
| Sec              | 0         | 15         | 30       | 45 | Comments |
| Min              |           |            |          |    |          |
| 1                | 0         | 0          | 0        | 0  |          |
| 2                | 0         | 0          | 0        | 0  |          |
| 3                | 0         | 0          | 0        | 0  |          |
| 4                | 0         | 0          | 0        | 0  |          |
| 5                | 0         | 0          | 0        | 0  |          |
| 6                | 0         | 0          | 0        | 0  |          |
| 7                | 0         | 0          | 0        | 0  |          |
| 8                | 0         | 0          | 0        | 0  |          |
| 9                | 0         | 0          | 0        | 0  |          |
| 10               | 0         | 0          | 0        | 0  |          |
| 11               | 0         | 0          | 0        | 0  |          |
| 12               | 0         | 0          | 0        | 0  |          |
| 13               | 0         | 0          | 0        | 0  |          |
| 14               | 0         | 0          | 0        | 0  |          |
| 15               | 0         | 0          | 0        | 0  |          |
| 16               | 0         | 0          | 0        | 0  |          |
| 17               | 0         | 0          | 0        | 0  |          |
| 18               | 0         | 0          | 0        | 0  |          |
| 19               | 0         | 0          | 0        | 0  |          |
| 20               | 0         | 0          | 0        | 0  |          |
| 21               | 0         | 0          | 0        | 0  |          |
| 22               | 0         | 0          | 0        | 0  |          |
| 23               | 0         | 0          | 0        | 0  |          |
| 24               | 0         | 0          | 0        | 0  |          |
| 25               | 0         | 0          | 0        | 0  |          |
| 26               | 0         | 0          | 0        | 0  |          |
| 27               | 0         | 0          | 0        | 0  |          |
| 28               | 0         | 0          | 0        | 0  |          |
| 29               | 0         | 0          | 0        | 0  |          |
| 30               | 0         | 0          | 0        | 0  |          |

|                             |                             |         |
|-----------------------------|-----------------------------|---------|
| Observer's Name (Print)     | Alvaro Castro               |         |
| Observer's Signature        | Date                        | 5/6/99  |
| Organization                | St. Johns River Power Park. |         |
| Certified By                | Date                        | 12/4/98 |
| Robert Technical Associates |                             |         |

EPA

## VISIBLE EMISSION OBSERVATION FORM 1

Method Used (Circle One)  
Method 9 203A 203B Other: \_\_\_\_\_

Company Name  
*St. Johns River Power Park.*

Facility Name  
*St. Johns River Power Park.*

Street Address  
*11201 New Berlin Rd.*

City  
*Jacksonville* State  
*FL* Zip  
*32216*

Process  
*Fuel Handling Building COM* Unit # \_\_\_\_\_ Operating Mode \_\_\_\_\_

Control Equipment  
*DC-3 Bargehouse.* Operating Mode  
*10V 2*

Describe Emission Point

Height of Emiss. Pt.  
Start \_\_\_\_\_ End \_\_\_\_\_

Height of Emiss. Pt. Rel. to Observer  
Start \_\_\_\_\_ End \_\_\_\_\_

Distance to Emiss. Pt.  
Start \_\_\_\_\_ End \_\_\_\_\_

Direction to Emiss. Pt. (Degrees)  
Start \_\_\_\_\_ End \_\_\_\_\_

Vertical Angle to Obs. Pt.  
Start \_\_\_\_\_ End \_\_\_\_\_

Direction to Obs. Pt. (Degrees)  
Start \_\_\_\_\_ End \_\_\_\_\_

Distance and Direction to Observation Point from Emission Point  
Start \_\_\_\_\_ End \_\_\_\_\_

Describe Emissions

Start \_\_\_\_\_ End \_\_\_\_\_

Emission Color \_\_\_\_\_

Water Droplet Plume  
Attached ☐ Detached ☐ None ☐

Describe Plume Background

Start \_\_\_\_\_ End \_\_\_\_\_

Background Color \_\_\_\_\_

Sky Conditions  
Start \_\_\_\_\_ End \_\_\_\_\_

Wind Speed  
Start \_\_\_\_\_ End \_\_\_\_\_

Wind Direction  
Start \_\_\_\_\_ End \_\_\_\_\_

Ambient Temp.  
Start \_\_\_\_\_ End \_\_\_\_\_

Wet Bulb Temp. \_\_\_\_\_ RH Percent \_\_\_\_\_

Source Layout Sketch

Draw North Arrow  
☐ TN ☐ MN

Observer's Position

Observation Point

140°

Sun Location Line

Stack With Plume

Sun

Wind

Longitude \_\_\_\_\_ Latitude \_\_\_\_\_ Declination \_\_\_\_\_

Additional Information

Form Number *0462* Page *2* of *2*

Continued on VEO Form Number *0461*

| Observation Date<br><i>5/6/99</i> |     | Time Zone |    |    |    | Start Time<br><i>100</i> | End Time<br><i>1100</i> |
|-----------------------------------|-----|-----------|----|----|----|--------------------------|-------------------------|
| Min                               | Sec | 0         | 15 | 30 | 45 | Comments                 |                         |
| 1                                 | 0   | 0         | 0  | 0  | 0  |                          |                         |
| 2                                 | 0   | 0         | 0  | 0  | 0  |                          |                         |
| 3                                 | 0   | 0         | 0  | 0  | 0  |                          |                         |
| 4                                 | 0   | 0         | 0  | 0  | 0  |                          |                         |
| 5                                 | 0   | 0         | 0  | 0  | 0  |                          |                         |
| 6                                 | 0   | 0         | 0  | 0  | 0  |                          |                         |
| 7                                 | 0   | 0         | 0  | 0  | 0  |                          |                         |
| 8                                 | 0   | 0         | 0  | 0  | 0  |                          |                         |
| 9                                 | 0   | 0         | 0  | 0  | 0  |                          |                         |
| 10                                | 0   | 0         | 0  | 0  | 0  |                          |                         |
| 11                                | 0   | 0         | 0  | 0  | 0  |                          |                         |
| 12                                | 0   | 0         | 0  | 0  | 0  |                          |                         |
| 13                                | 0   | 0         | 0  | 0  | 0  |                          |                         |
| 14                                | 0   | 0         | 0  | 0  | 0  |                          |                         |
| 15                                | 0   | 0         | 0  | 0  | 0  |                          |                         |
| 16                                | 0   | 0         | 0  | 0  | 0  |                          |                         |
| 17                                | 0   | 0         | 0  | 0  | 0  |                          |                         |
| 18                                | 0   | 0         | 0  | 0  | 0  |                          |                         |
| 19                                | 0   | 0         | 0  | 0  | 0  |                          |                         |
| 20                                | 0   | 0         | 0  | 0  | 0  |                          |                         |
| 21                                | 0   | 0         | 0  | 0  | 0  |                          |                         |
| 22                                | 0   | 0         | 0  | 0  | 0  |                          |                         |
| 23                                | 0   | 0         | 0  | 0  | 0  |                          |                         |
| 24                                | 0   | 0         | 0  | 0  | 0  |                          |                         |
| 25                                | 0   | 0         | 0  | 0  | 0  |                          |                         |
| 26                                | 0   | 0         | 0  | 0  | 0  |                          |                         |
| 27                                | 0   | 0         | 0  | 0  | 0  |                          |                         |
| 28                                | 0   | 0         | 0  | 0  | 0  |                          |                         |
| 29                                | 0   | 0         | 0  | 0  | 0  |                          |                         |
| 30                                | 0   | 0         | 0  | 0  | 0  |                          |                         |

Observer's Name (Print)  
*Alvaro Castro*

Observer's Signature  
*Alvaro Castro* Date  
*5/6/99*

Organization  
*St. Johns River Power Park.*

Certified by  
*Eastera Technical Associates* Date  
*12/2/98*

**EMISSIONS UNIT EU046**  
**Fuel Handling Building (DC-3)**

**ATTACHMENT EU046-05**  
**Emissions Estimates**

**Foster Wheeler Environmental Corporation**  
**EXCEL 7.0 Worksheet Calculation**

**By:** D. Graziani, P.E.

**Date:** 11/3/98

**Ckd. By:** Kim Evans, P.E.

**Date:** 11/10/98

**Cal. No.:** 901103DJG01

**Project No.:** 7830.0020.0056

**Revision No.:** 1

**Project:** St. Johns River Power Park PSD Permit Update

**Subject:** Emissions Estimates for the Fuel Handling Building (DC-04)

**Emissions Data**

| Raw Materials  | Constant | Belt Speed<br>(MPH) | H2O<br>(%) | Particle Size Multipliers |      |       | Emission Factors (lb/ton) |         |         |
|----------------|----------|---------------------|------------|---------------------------|------|-------|---------------------------|---------|---------|
|                |          |                     |            | PM                        | PM10 | PM2.5 | PM                        | PM10    | PM2.5   |
| Coal           | 0.0032   | 9.32                | 5          | 0.74                      | 0.35 | 0.11  | 0.00148                   | 0.00070 | 0.00022 |
| Petroleum Coke | 0.0032   | 9.32                | 5          | 0.74                      | 0.35 | 0.11  | 0.00148                   | 0.00070 | 0.00022 |
| Limestone      | 0.0032   | 9.32                | 6.5        | 0.74                      | 0.35 | 0.11  | 0.00102                   | 0.00048 | 0.00015 |

**Operating Data**

| Raw Materials  | Operating Rates |         |
|----------------|-----------------|---------|
|                | (TPH)           | (TPY)   |
| Coal           | 4000            | 5126352 |
| Petroleum Coke | 4000            | 5126352 |
| Limestone      | 0               | 0       |

Maximum Associated with C-4

Maximum Associated with C-4

**Emission Rates - Uncontrolled**

| Raw Materials  | Short-Term |         |         |       |       |       |
|----------------|------------|---------|---------|-------|-------|-------|
|                | PM         | PM10    | PM2.5   | PM    | PM10  | PM2.5 |
|                | (lb/hr)    | (lb/hr) | (lb/hr) | (g/s) | (g/s) | (g/s) |
| Coal           | 47.44      | 22.44   | 7.05    | 5.983 | 2.830 | 0.889 |
| Petroleum Coke | 47.44      | 22.44   | 7.05    | 5.983 | 2.830 | 0.889 |
| Limestone      | 0          | 0       | 0       | 0     | 0     | 0     |

8 Transfer Points & 4 Sample Train Ports

8 Transfer Points & 4 Sample Train Ports

**Emission Rates - Controlled 99.50%**

| Raw Materials  | Short-Term |         |         |       |       |       |
|----------------|------------|---------|---------|-------|-------|-------|
|                | PM         | PM10    | PM2.5   | PM    | PM10  | PM2.5 |
|                | (lb/hr)    | (lb/hr) | (lb/hr) | (g/s) | (g/s) | (g/s) |
| Coal           | 0.237      | 0.112   | 0.035   | 0.030 | 0.014 | 0.004 |
| Petroleum Coke | 0.237      | 0.112   | 0.035   | 0.030 | 0.014 | 0.004 |
| Limestone      | 0          | 0       | 0       | 0     | 0     | 0     |

**Emission Rates - Uncontrolled**

| Raw Materials  | Long-Term |       |       |       |       |       |
|----------------|-----------|-------|-------|-------|-------|-------|
|                | PM        | PM10  | PM2.5 | PM    | PM10  | PM2.5 |
|                | (TPY)     | (TPY) | (TPY) | (g/s) | (g/s) | (g/s) |
| Coal           | 30.40     | 14.38 | 4.52  | 0.875 | 0.414 | 0.130 |
| Petroleum Coke | 30.40     | 14.38 | 4.52  | 0.875 | 0.414 | 0.130 |
| Limestone      | 0         | 0     | 0     | 0     | 0     | 0     |

8 Transfer Points & 4 Sample Train Ports

8 Transfer Points & 4 Sample Train Ports

**Emission Rates - Controlled 99.50%**

| Raw Materials  | Long-Term |       |       |         |         |         |
|----------------|-----------|-------|-------|---------|---------|---------|
|                | PM        | PM10  | PM2.5 | PM      | PM10    | PM2.5   |
|                | (TPY)     | (TPY) | (TPY) | (g/s)   | (g/s)   | (g/s)   |
| Coal           | 0.152     | 0.072 | 0.023 | 0.00438 | 0.00207 | 0.00065 |
| Petroleum Coke | 0.152     | 0.072 | 0.023 | 0.00438 | 0.00207 | 0.00065 |
| Limestone      | 0         | 0     | 0     | 0       | 0       | 0       |

**References:**

Emission Factor - AP42 Chapter 13.2.4 Aggregate Handling and Storage Piles

Belt Speed - JEA Operation Data

Moisture Contents - JEA Operational Data

Transfer Rates - JEA Operational Data

### III. EMISSIONS UNIT INFORMATION

#### A. TYPE OF EMISSIONS UNIT (Regulated and Unregulated Emissions Units)

Emissions Unit Information Section 4

SJRPP - Fuel Storage Bins (DC-4 & DC-5)

#### Type of Emissions Unit Addressed in This Section

1. Regulated or Unregulated Emissions Unit? Check one :

- ☒ [ X ] 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.

2. Single Process, Group of Processes, or Fugitive Only? 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).
- ☒ [ X ] 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.

III. Part 1 - 1

**B. GENERAL EMISSIONS UNIT INFORMATION**  
(Regulated and Unregulated Emissions Units)

**Emissions Unit Description and Status**

|                                                                                                                                                       |                                      |                                                |
|-------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------------------|------------------------------------------------|
| 1. Description of Emissions Unit Addressed in This Section :<br><br>SJRPP - Fuel Storage Bins (DC-4 & DC-5)                                           |                                      |                                                |
| 2. Emissions Unit Identification Number : 047<br>[ ] No Corresponding ID [ ] Unknown                                                                  |                                      |                                                |
| 3. Emissions Unit Status<br>Code : A                                                                                                                  | 4. Acid Rain Unit?<br>[ ] Yes [X] No | 5. Emissions Unit Major<br>Group SIC Code : 49 |
| 6. Emissions Unit Comment :<br><br>Emissions Unit consists of the fourteen (14) fuel storage bins (7 per boiler) and two (2) tripper transfer points. |                                      |                                                |



**Emissions Unit Information Section** 4

SJRPP - Fuel Storage Bins (DC-4 & DC-5)

**Emissions Unit Control Equipment** 1

1. Description :

Emissions from each group of storage bins and the associated transfer point are controlled by use of a baghouse.

2. Control Device or Method Code : 18

**C. EMISSIONS UNIT DETAIL INFORMATION**  
**(Regulated Emissions Units Only)**

**Emissions Unit Information Section**  
 SJRPP - Fuel Storage Bins (DC-4 & DC-5)

4

**Emissions Unit Details**

|                                       |                    |  |
|---------------------------------------|--------------------|--|
| 1. Initial Startup Date :             | 01-Dec-1986        |  |
| 2. Long-term Reserve Shutdown Date :  |                    |  |
| 3. Package Unit :                     |                    |  |
| Manufacturer :                        | Model Number :     |  |
| 4. Generator Nameplate Rating :       | MW                 |  |
| 5. Incinerator Information :          |                    |  |
| Dwell Temperature :                   | Degrees Fahrenheit |  |
| Dwell Time :                          | Seconds            |  |
| Incinerator Afterburner Temperature : | Degrees Fahrenheit |  |

**Emissions Unit Operating Capacity**

|                                               |          |               |
|-----------------------------------------------|----------|---------------|
| 1. Maximum Heat Input Rate :                  | mmBtu/hr |               |
| 2. Maximum Incinerator Rate :                 | lb/hr    | tons/day      |
| 3. Maximum Process or Throughput Rate :       | 1000     | tons per hour |
| 4. Maximum Production Rate :                  |          |               |
| 5. Operating Capacity Comment :               |          |               |
| Maximum rate is set by conveyors C-7 and C-8. |          |               |

**Emissions Unit Operating Schedule**

|                                        |                  |
|----------------------------------------|------------------|
| Requested Maximum Operating Schedule : |                  |
| 24 hours/day                           | 7 days/week      |
| 52 weeks/year                          | 8,760 hours/year |

**D. EMISSIONS UNIT REGULATIONS**  
**(Regulated Emissions Units Only)**

**Emissions Unit Information Section**      4  
SJRPP - Fuel Storage Bins (DC-4 & DC-5)

**Rule Applicability Analysis**

Unit was subject to PSD Review including the application of BACT and is also subject to 40 CFR Part 60, Subpart Y - Standards of Performance for Coal Preparation Plants while processing coal.

III. Part 6a - 1

**List of Applicable Regulations**

Rule 62-204.800(7)(b).31, F.A.C., Adoption of 40 CFR Part 60 Subpart Y

Rule 62-204.800(7)(c), F.A.C., NSPS Controlling Standards

Rule 62-204.800(7)(d), F.A.C., Adoption of the General Provisions (As Noted)

Rule 62-204.800(7)(e), F.A.C., Adoption of the NSPS Appendices (As Noted)

Rule 62-210.300(1), F.A.C., Air Construction Permit

Rule 62-210.550, F.A.C., Stack Height Policy

Rule 62-210.650, F.A.C., Circumvention

Rule 62-210.700(1), (4), & (6), F.A.C., Excess Emissions

Rule 62-297.310, F.A.C., General Test Requirements

Rule 62-212.300, F.A.C., General Preconstruction Review Requirements

Rule 62-297.401 (5) & (9), F.A.C., EPA Methods 5 and 9, 40 CFR Part 60, Appendix A

40 CFR Part 60.7, Notification and Recordkeeping

40 CFR Part 60.8, Performance tests

III. Part 6b - 1

DEP Form No. 62-210.900(1) - Form  
Effective : 3-21-96

**List of Applicable Regulations**

40 CFR Part 60.11, Compliance with Standards and Maintenance Requirements

40 CFR Part 60.12, Circumvention

40 CFR Part 60.13, Monitoring Requirements

40 CFR Part 60.19, General Notifications and Reporting Requirements

40 CFR Part 60 Subpart Y - Standards of Performance for Coal Preparation Plants

40 CFR Part 60.250(a), Applicability and Designation of Affected Facility

40 CFR Part 60.252(c), Standards for Particulate Matter

40 CFR Part 60.254(b)(2), Test Methods and Procedures

Rule 62-210.300(5), F.A.C., Notification of Start-up

Rule 62-4.040(1), F.A.C., Exemptions

Rule 2.201, Adoption of Chapter 62-204, F.A.C. (as noted)

Rule 2.301, Adoption of Chapter 62-210, F.A.C. (as noted)

Rule 2.1101, Adoption of Chapter 62-297, F.A.C.as noted)

**III. Part 6b - 2**

DEP Form No. 62-210.900(1) - Form  
Effective : 3-21-96

**Emissions Unit Information Section**  
SJRPP - Fuel Storage Bins (DC-4 & DC-5)

4

**List of Applicable Regulations**

Rule 2.105, Maintenance of Air Pollution Control Devices

III. Part 6b - 3

DEP Form No. 62-210.900(1) - Form  
Effective : 3-21-96

## E. EMISSION POINT (STACK/VENT) INFORMATION

Emissions Unit Information Section 4

SJRPP - Fuel Storage Bins (DC-4 & DC-5)

### Emission Point Description and Type :

|                                                                                      |                                                                                              |
|--------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------|
| 1. Identification of Point on Plot Plan or Flow Diagram :                            | DC-4 & DC-5                                                                                  |
| 2. Emission Point Type Code :                                                        | 3                                                                                            |
| 3. Descriptions of Emission Points Comprising this Emissions Unit :                  | Dust Collector DC-4 - Unit #1 Fuel Storage Bins, Tripper, and the C-8 to C-10 Transfer Point |
| 4. ID Numbers or Descriptions of Emission Units with this Emission Point in Common : | DC-4: Dust collection system<br>DC-5: Dust collection system                                 |
| 5. Discharge Type Code :                                                             | H                                                                                            |
| 6. Stack Height :                                                                    | 171 feet                                                                                     |
| 7. Exit Diameter :                                                                   | 2.71 feet                                                                                    |
| 8. Exit Temperature :                                                                | 68 °F                                                                                        |
| 9. Actual Volumetric Flow Rate :                                                     | 25,400 acfm                                                                                  |
| 10. Percent Water Vapor :                                                            | 2.00 %                                                                                       |
| 11. Maximum Dry Standard Flow Rate :                                                 | 25,400 dscfm                                                                                 |
| 12. Nonstack Emission Point Height :                                                 | feet                                                                                         |
| 13. Emission Point UTM Coordinates :                                                 | Zone : 17 East (km) : 447.044 North (km) : 3,366.895                                         |
| 14. Emission Point Comment :                                                         |                                                                                              |

III. Part 7b - 1

DEP Form No. 62-210.900(1) - Form  
Effective : 3-21-96

III. Part 7b - 2

DEP Form No. 62-210.900(1) - Form  
Effective : 3-21-96



## E. EMISSION POINT (STACK/VENT) INFORMATION

Emissions Unit Information Section 4

SJRPP - Fuel Storage Bins (DC-4 & DC-5)

### Emission Point Description and Type :

|                                                                                      |                                                                                             |
|--------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------|
| 1. Identification of Point on Plot Plan or Flow Diagram :                            | DC-4 & DC-5                                                                                 |
| 2. Emission Point Type Code :                                                        | 3                                                                                           |
| 3. Descriptions of Emission Points Comprising this Emissions Unit :                  | Dust Collector DC-5 - Unit #2 Fuel Storage Bins, Tripper, and the C-7 to C-9 Transfer Point |
| 4. ID Numbers or Descriptions of Emission Units with this Emission Point in Common : | DC-4: Dust collection system<br>DC-5: Dust collection system                                |
| 5. Discharge Type Code :                                                             | H                                                                                           |
| 6. Stack Height :                                                                    | 171 feet                                                                                    |
| 7. Exit Diameter :                                                                   | 2.71 feet                                                                                   |
| 8. Exit Temperature :                                                                | 68 °F                                                                                       |
| 9. Actual Volumetric Flow Rate :                                                     | 25,400 acfm                                                                                 |
| 10. Percent Water Vapor :                                                            | 2.00 %                                                                                      |
| 11. Maximum Dry Standard Flow Rate :                                                 | 25,400 dscfm                                                                                |
| 12. Nonstack Emission Point Height :                                                 | feet                                                                                        |
| 13. Emission Point UTM Coordinates :                                                 | Zone : 17 East (km) : 447.044 North (km) : 3,366.895                                        |
| 14. Emission Point Comment :                                                         |                                                                                             |

III. Part 7b - 3

III. Part 7b - 4

DEP Form No. 62-210.900(1) - Form  
Effective : 3-21-96

## F. SEGMENT (PROCESS/FUEL) INFORMATION

Emissions Unit Information Section 4

SJRPP - Fuel Storage Bins (DC-4 & DC-5)

**Segment Description and Rate :** Segment 1

|                                                                                               |                                       |
|-----------------------------------------------------------------------------------------------|---------------------------------------|
| 1. Segment Description (Process/Fuel Type and Associated Operating Method/Mode) :<br><br>Coal |                                       |
| 2. Source Classification Code (SCC) : 30501099                                                |                                       |
| 3. SCC Units : Tons Processed                                                                 |                                       |
| 4. Maximum Hourly Rate : 1,000.00                                                             | 5. Maximum Annual Rate : 5,126,000.00 |
| 6. Estimated Annual Activity Factor : 0.00                                                    |                                       |
| 7. Maximum Percent Sulfur :                                                                   | 8. Maximum Percent Ash :              |
| 9. Million Btu per SCC Unit :                                                                 |                                       |
| 10. Segment Comment :                                                                         |                                       |

III. Part 8 - 1

## F. SEGMENT (PROCESS/FUEL) INFORMATION

Emissions Unit Information Section 4

SJRPP - Fuel Storage Bins (DC-4 & DC-5)

**Segment Description and Rate :** Segment 2

|                                                                                                         |                                       |
|---------------------------------------------------------------------------------------------------------|---------------------------------------|
| 1. Segment Description (Process/Fuel Type and Associated Operating Method/Mode) :<br><br>Petroleum Coke |                                       |
| 2. Source Classification Code (SCC) : 30501099                                                          |                                       |
| 3. SCC Units : Tons Processed                                                                           |                                       |
| 4. Maximum Hourly Rate : 1,000.00                                                                       | 5. Maximum Annual Rate : 5,126,000.00 |
| 6. Estimated Annual Activity Factor : 0.00                                                              |                                       |
| 7. Maximum Percent Sulfur :                                                                             | 8. Maximum Percent Ash :              |
| 9. Million Btu per SCC Unit :                                                                           |                                       |
| 10. Segment Comment :                                                                                   |                                       |

III. Part 8 - 2

**G. EMISSIONS UNIT POLLUTANTS**  
**(Regulated and Unregulated Emissions Units)**

**Emissions Unit Information Section**      4  
SJRPP - Fuel Storage Bins (DC-4 & DC-5)

| 1. Pollutant Emitted | 2. Primary Control Device Code | 3. Secondary Control Device Code | 4. Pollutant Regulatory Code |
|----------------------|--------------------------------|----------------------------------|------------------------------|
| 1 - PM               | 018                            |                                  | EL                           |
| 2 - PM10             | 018                            |                                  | EL                           |

III. Part 9a - 1

DEP Form No. 62-210.900(1) - Form  
Effective : 3-21-96

## 4

Pollutant

1

**H. EMISSIONS UNIT POLLUTANT DETAIL INFORMATION**  
**(Regulated Emissions Units Only - Emissions Limited Pollutants Only)**

**Emissions Unit Information Section**      4

SJRPP - Fuel Storage Bins (DC-4 & DC-5)

**Pollutant Potential/Estimated Emissions :**      Pollutant      2

|                                                                                                                          |                   |                     |
|--------------------------------------------------------------------------------------------------------------------------|-------------------|---------------------|
| 1. Pollutant Emitted : <b>PM10</b>                                                                                       |                   |                     |
| 2. Total Percent Efficiency of Control :                                                                                 | 99.50             | %                   |
| 3. Potential Emissions :                                                                                                 | 0.0040000 lb/hour | 0.0110000 tons/year |
| 4. Synthetically Limited?<br>[   ] Yes                    [X ] No                                                        |                   |                     |
| 5. Range of Estimated Fugitive/Other Emissions:<br><div style="text-align: right;">to                    tons/year</div> |                   |                     |
| 6. Emissions Factor                                                                                                      | 0                 | Units lb/ton        |
| Reference    AP-42, (EF=0.0007)                                                                                          |                   |                     |
| 7. Emissions Method Code :      3                                                                                        |                   |                     |
| 8. Calculations of Emissions :<br><br>See Attachment EU047-05                                                            |                   |                     |
| 9. Pollutant Potential/Estimated Emissions Comment :                                                                     |                   |                     |

**Emissions Unit Information Section** 4  
SJRPP - Fuel Storage Bins (DC-4 & DC-5)

**Pollutant Information Section** 1

**Allowable Emissions** 1

|                                                                                     |                                                                                                    |                 |                |
|-------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------|-----------------|----------------|
| 1. Basis for Allowable Emissions Code :                                             | OTHER                                                                                              |                 |                |
| 2. Future Effective Date of Allowable Emissions :                                   | 01-Aug-1999                                                                                        |                 |                |
| 3. Requested Allowable Emissions and Units :                                        | 5.00                                                                                               | percent opacity |                |
| 4. Equivalent Allowable Emissions :                                                 | 0.01                                                                                               | lb/hour         | 0.02 tons/year |
| 5. Method of Compliance :                                                           | Stack Test Waiver Requested Rule 62-297.310(7)(c), F.A.C.                                          |                 |                |
| 6. Pollutant Allowable Emissions Comment (Desc. of Related Operating Method/Mode) : | Updated BACT revised from 10% opacity to a requested no visible emissions limitation (5% Opacity). |                 |                |

III. Part 9c - 1



**Emissions Unit Information Section** 4  
SJRPP - Fuel Storage Bins (DC-4 & DC-5)

**Pollutant Information Section** 2

**Allowable Emissions** 1

|                                                                                                                                                                                           |  |             |                 |
|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--|-------------|-----------------|
| 1. Basis for Allowable Emissions Code :                                                                                                                                                   |  | OTHER       |                 |
| 2. Future Effective Date of Allowable Emissions :                                                                                                                                         |  | 01-Aug-1999 |                 |
| 3. Requested Allowable Emissions and Units :                                                                                                                                              |  | 5.00        | percent opacity |
| 4. Equivalent Allowable Emissions :                                                                                                                                                       |  | 0.00        | lb/hour         |
|                                                                                                                                                                                           |  | 0.01        | tons/year       |
| 5. Method of Compliance :<br>Stack Test Waiver Requested Rule 62-297.310(7)(c), F.A.C.                                                                                                    |  |             |                 |
| 6. Pollutant.Allowable Emissions Comment (Desc. of Related Operating Method/Mode) :<br>Updated BACT revised from 10% opacity to a requested no visible emissions limitation (5% Opacity). |  |             |                 |

III. Part 9c - 2

**I. VISIBLE EMISSIONS INFORMATION**  
**(Regulated Emissions Units Only)**

**Emissions Unit Information Section**       4    
SJRPP - Fuel Storage Bins (DC-4 & DC-5)

**Visible Emissions Limitation :** Visible Emissions Limitation       1  

|                                                                                                                                                                                                                                                                                                                                                                                              |
|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 1. Visible Emissions Subtype :                      05                                                                                                                                                                                                                                                                                                                                       |
| 2. Basis for Allowable Opacity :                      OTHER                                                                                                                                                                                                                                                                                                                                  |
| 3. Requested Allowable Opacity :<br><div style="text-align: right; margin-right: 50px;">Normal Conditions :              5              %</div> <div style="text-align: right; margin-right: 50px;">Exceptional Conditions :        100           %</div> <div style="text-align: right; margin-right: 50px;">Maximum Period of Excess Opacity Allowed :                      min/hour</div> |
| 4. Method of Compliance :<br><br>EPA Method 9                                                                                                                                                                                                                                                                                                                                                |
| 5. Visible Emissions Comment :<br><br>Updated BACT revised from 10% opacity to a requested no visible emissions limitation (5% Opacity).<br><br>Excess Opacity - 2 hours in any 24-hour period                                                                                                                                                                                               |

III. Part 10 - 1

**J. CONTINUOUS MONITOR INFORMATION**  
**(Regulated Emissions Units Only)**

**Emissions Unit Information Section**

III. Part 11 - 1

DEP Form No. 62-210.900(1) - Form  
Effective : 3-21-96

## K. PREVENTION OF SIGNIFICANT DETERIORATION (PSD) INCREMENT TRACKING INFORMATION

Emissions Unit Information Section      4

SJRPP - Fuel Storage Bins (DC-4 & DC-5)

### PSD Increment Consumption Determination

#### 1. Increment Consuming for Particulate Matter or Sulfur Dioxide?

- ☐ The emissions unit is undergoing PSD review as part of this application, or has undergone PSD review previously, for particulate matter or sulfur dioxide. If so, emissions unit consumes increment.
- ☐ The facility addressed in this application is classified as an EPA major source pursuant to paragraph (c) of the definition of "major source of air pollution" in Chapter 62-213, F.A.C., and the emissions unit addressed in this section commenced (or will commence) construction after January 6, 1975. If so, baseline emissions are zero, and emissions unit consumes increment.
- ☐ The facility addressed in this application is classified as an EPA major source, and the emissions unit began initial operation after January 6, 1975, but before December 27, 1977. If so, baseline emissions are zero, and emissions unit consumes increment.
- ☒ For any facility, the emissions unit began (or will begin) initial operation after December 27, 1977. If so, baseline emissions are zero, and emissions unit consumes increment.
- ☐ None of the above apply. If so, the baseline emissions of the emissions unit are nonzero. In such case, additional analysis, beyond the scope of this application, is needed to determine whether changes in emissions have occurred (or will occur) after the baseline date that may consume or expand increment.

## 2. Increment Consuming for Nitrogen Dioxide?

- [ ] The emissions unit addressed in this section is undergoing PSD review as part of this application, or has undergone PSD review previously, for nitrogen dioxide. If so, emissions unit consumes increment.
- [ ] The facility addressed in this application is classified as an EPA major source pursuant to paragraph (c) of the definition of "major source of air pollution" in Chapter 62-213, F.A.C., and the emissions unit addressed in this section commenced (or will commence) construction after February 8, 1988. If so, baseline emissions are zero, and emissions unit consumes increment.
- [ ] The facility addressed in this application is classified as an EPA major source, and the emissions unit began initial operation after February 8, 1988, but before March 28, 1988. If so, baseline emissions are zero, and emissions unit consumes increment.
- [ ] For any facility, the emissions unit began (or will begin) initial operation after March 28, 1988. If so, baseline emissions are zero, and emissions unit consumes increment.
- [ ] None of the above apply. If so, baseline emissions of the emissions unit are nonzero. In such case, additional analysis, beyond the scope of this application, is needed to determine whether changes in emissions have occurred (or will occur) after the baseline date that may consume or expand increment.

### 3. Increment Consuming/Expanding Code :

PM : C

SO2 :

NO2 :

### 4. Baseline Emissions :

PM : 0.0000 lb/hour

SO2 : lb/hour

NO2 : 0.0000 tons/year

tons/year

tons/year

### 5. PSD Comment :

Unit emits only particulate matter.

## III. Part 12 - 2

## L. EMISSIONS UNIT SUPPLEMENTAL INFORMATION

Emissions Unit Information Section 4

SJRPP - Fuel Storage Bins (DC-4 & DC-5)

### Supplemental Requirements for All Applications

|                                                                   |          |
|-------------------------------------------------------------------|----------|
| 1. Process Flow Diagram :                                         | EU047-01 |
| 2. Fuel Analysis or Specification :                               | NA       |
| 3. Detailed Description of Control Equipment :                    | EU047-02 |
| 4. Description of Stack Sampling Facilities :                     | EU047-03 |
| 5. Compliance Test Report :                                       | EU047-04 |
| 6. Procedures for Startup and Shutdown :                          | NA       |
| 7. Operation and Maintenance Plan :                               | NA       |
| 8. Supplemental Information for Construction Permit Application : | EU047-05 |
| 9. Other Information Required by Rule or Statute :                | NA       |

### Additional Supplemental Requirements for Category I Applications Only

|                                                          |
|----------------------------------------------------------|
| 10. Alternative Methods of Operations :                  |
| 11. Alternative Modes of Operation (Emissions Trading) : |

III. Part 13 - 1

12. Identification of Additional Applicable Requirements :

13. Compliance Assurance Monitoring  
Plan :

14. Acid Rain Application (Hard-copy Required) :

Acid Rain Part - Phase II (Form No. 62-210.900(1)(a))

Repowering Extension Plan (Form No. 62-210.900(1)(a)1.)

New Unit Exemption (Form No. 62-210.900(1)(a)2.)

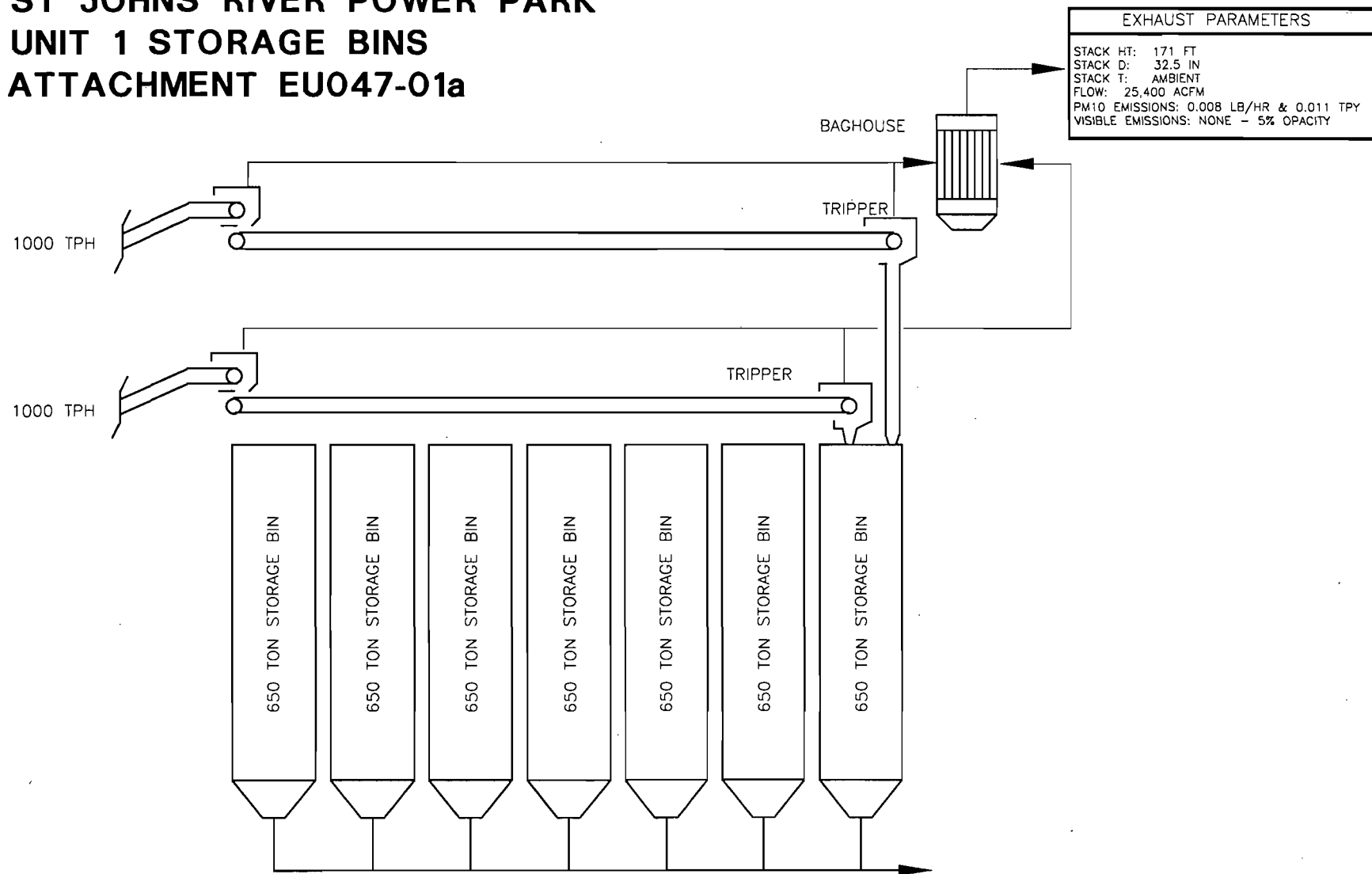
Retired Unit Exemption (Form No. 62-210.900(1)(a)3.)

**EMISSIONS UNIT EU047**  
**Fuel Storage Bins (DC-4 & DC-5)**

**ATTACHMENT EU047-01**  
**Process Flow Diagram**



# ST JOHNS RIVER POWER PARK UNIT 1 STORAGE BINS ATTACHMENT EU047-01a

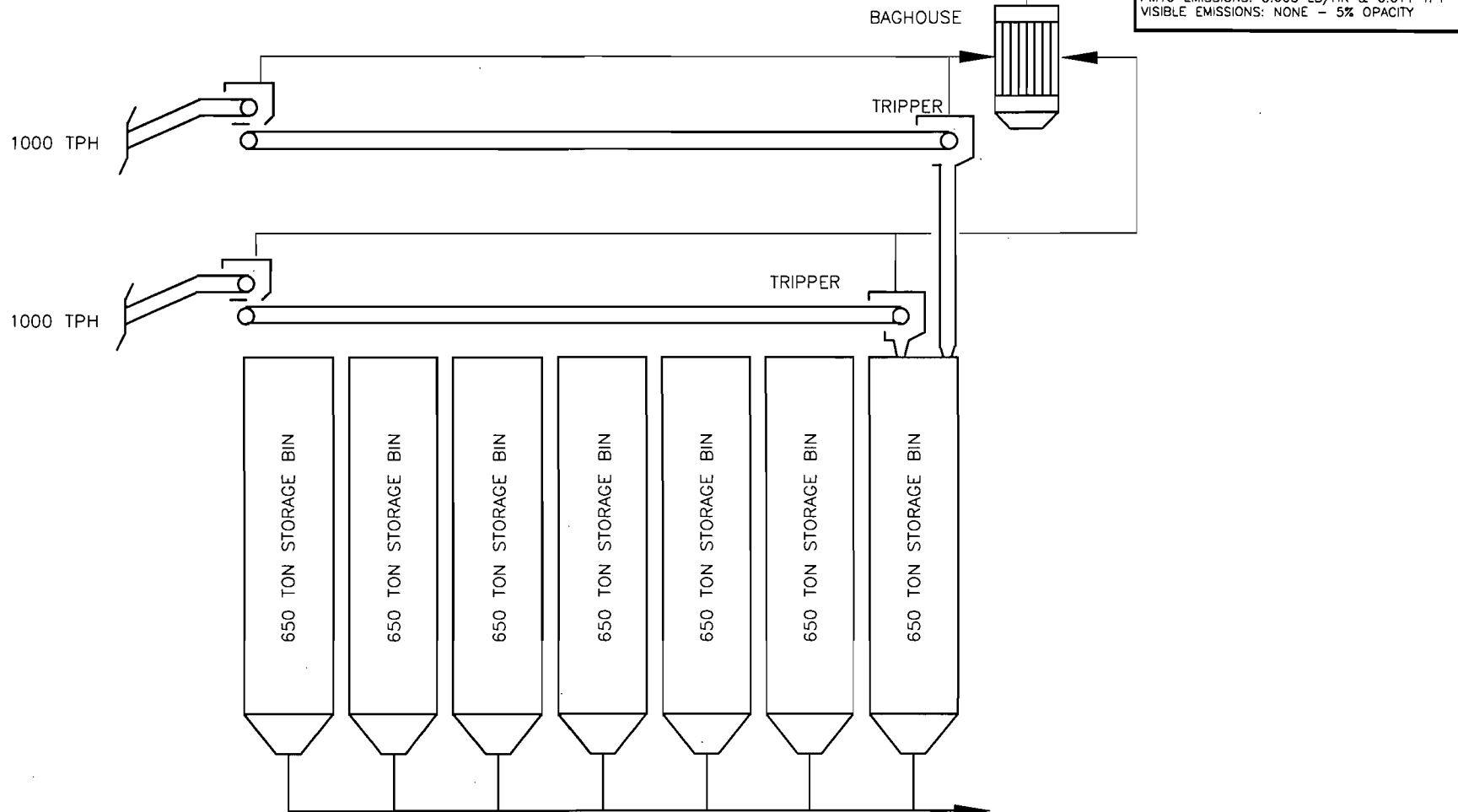


|                                                                                                                          |                                             |                                                         |
|--------------------------------------------------------------------------------------------------------------------------|---------------------------------------------|---------------------------------------------------------|
| <b>JEA</b><br>ST JOHNS RIVER POWER PARK<br>PSD PERMIT UPDATE<br>Simplified Process Flow Diagram<br>Emissions Unit ID 047 |                                             |                                                         |
| <b>FW FOSTER WHEELER ENVIRONMENTAL CORPORATION</b>                                                                       |                                             |                                                         |
| SCALE N/A<br>DATE: 04/08/99                                                                                              | PREPARED DJG<br>CHECKED MAE<br>APPROVED DJF | CAD FILE NO.<br>EU047PPg.DWG<br>FIGURE NO.<br>EU047-01a |

# ST JOHNS RIVER POWER PARK

## UNIT 1 STORAGE BINS

### ATTACHMENT EU047-01b



|                                                          |              |                           |  |
|----------------------------------------------------------|--------------|---------------------------|--|
| <b>JEA</b>                                               |              |                           |  |
| ST JOHNS RIVER POWER PARK<br>PSD PERMIT UPDATE           |              |                           |  |
| Simplified Process Flow Diagram<br>Emissions Unit ID 047 |              |                           |  |
| <b>FOSTER WHEELER ENVIRONMENTAL CORPORATION</b>          |              |                           |  |
| SCALE N/A                                                | PREPARED DJG | CAD FILE NO. EU047PFD.DWG |  |
| DATE: 04/08/99                                           | CHECKED MAE  | FIGURE NO. EU047-01b      |  |
|                                                          | APPROVED DJF |                           |  |

**EMISSIONS UNIT EU047**  
**Fuel Storage Bins (DC-4 & DC-5)**

**ATTACHMENT EU047-02**  
**Control Equipment Description**

**Emissions Unit EU047**

**SJRPP - Fuel Storage Bins (DC-4 & DC-5)**

**Control Equipment Description**

**Control Equipment**

**Two Separate Fabric Filters/Baghouses - Existing Equipment**

**Exhaust Parameters**

**Stack Height: 171 feet; Stack Diameter: 32.5 inches; Stack Exhaust Temperature: Ambient; and Stack Flows 25,400 ACFM per stack**

**Reasonable Assurances**

**Emission Limitation - No Visible Emissions (5% Opacity)**

**See Attachment EU047-04, Compliance Test Report**

**EMISSIONS UNIT EU047**  
**Fuel Storage Bins (DC-4 & DC-5)**

**ATTACHMENT EU047-03**  
**Stack Sampling Facilities Description**

## **STACK SAMPLING FACILITIES DESCRIPTION**

Pursuant to Rule 62-297.310(6), F.A.C. JEA will ensure that the required stack sampling facilities include sampling ports (Rule 62-297.310(6)(c), F.A.C.), work platforms (Rule 62-297.310(6)(d), F.A.C.), access to work platforms (Rule 62-297.310(6)(e), F.A.C.), electrical power (Rule 62-297.310(6)(f), F.A.C.), and sampling equipment support (Rule 62-297.310(6)(g), F.A.C.). All stack sampling facilities will meet any Occupational Safety and Health Administration (OSHA) Safety and Health Standards described in 29 CFR Part 1910, Subparts D and E.

In accordance with Rule 62-297.310(6)(b), F.A.C., JEA will use temporary stack sampling facilities for the existing units which are not required to conduct a compliance test on at least an annual basis may use. When electing to use temporary sampling facilities on an emissions unit, and the Department elects to test the unit, JEA will install the temporary facilities on the emissions unit within 5 days of a request by the Department. The temporary sampling facilities will remain on the emissions unit until the test is completed.

**EMISSIONS UNIT EU047  
FUEL STORAGE BINS (DC-4 & DC-5)**

**ATTACHMENT EU047-04  
Compliance Test Report**

# VISIBLE EMISSION OBSERVATION FORM 1

Method Used (Circle One)  
☒ Method 9      203A      203B      Other: \_\_\_\_\_

|                             |       |       |
|-----------------------------|-------|-------|
| Company Name                |       |       |
| St. Johns River Power Plant |       |       |
| Facility Name               |       |       |
| St. Johns River Power Park  |       |       |
| Street Address              |       |       |
| 11201 New Berlin Rd.        |       |       |
| City                        | State | Zip   |
| Jacksonville                | FL    | 32226 |

|                                        |             |                                |
|----------------------------------------|-------------|--------------------------------|
| Process<br>Unit #1 Boiler Fuel Loading | Unit #<br>1 | Operating Mode<br>Fuel Loading |
| Control Equipment<br>BAS HOUSE DC 4    |             | Operating Mode<br>100% CAP.    |

|                                                           |  |                                                                        |  |
|-----------------------------------------------------------|--|------------------------------------------------------------------------|--|
| Describe Emission Point<br><i>Baghouse Effluent.</i>      |  |                                                                        |  |
| Height of Emiss. Pt.<br>Start <i>7'</i> End <i>7'</i>     |  | Height of Emiss. Pt. Rel. to Observer<br>Start <i>2'</i> End <i>2'</i> |  |
| Distance to Emiss. Pt.<br>Start <i>20'</i> End <i>20'</i> |  | Direction to Emiss. Pt. (Degrees)<br>Start <i>275°</i> End <i>275°</i> |  |

|                                                                 |                                 |
|-----------------------------------------------------------------|---------------------------------|
| Vertical Angle to Obs. Pt.                                      | Direction to Obs. Pt. (Degrees) |
| Start 6° End 6°                                                 | Start 278° End 278°             |
| Distance and Direction to Observation Point from Emission Point |                                 |
| Start 3' 90°                                                    | End 3' 70°                      |

|                                   |                                   |                                                                            |
|-----------------------------------|-----------------------------------|----------------------------------------------------------------------------|
| Describe Emissions                |                                   |                                                                            |
| Start <u>none</u>                 | End <u>none</u>                   |                                                                            |
| Emission Color                    | Water Droplet Plume               |                                                                            |
| Start <u>none</u> End <u>none</u> | Attached <input type="checkbox"/> | Detached <input type="checkbox"/> None <input checked="" type="checkbox"/> |

|                           |                  |                      |                  |
|---------------------------|------------------|----------------------|------------------|
| Describe Plume Background |                  |                      |                  |
| Start <i>open sky</i>     |                  | End <i>open sky.</i> |                  |
| Background Color          |                  | Sky Conditions       |                  |
| Start <i>Blue</i>         | End <i>Blue.</i> | Start <i>clear</i>   | End <i>clear</i> |
| Wind Speed                |                  | Wind Direction       |                  |
| Start <i>0-3</i>          | End <i>0-3</i>   | Start <i>SW</i>      | End <i>SW</i>    |
| Ambient Temp.             |                  | Wet Bulb Temp.       | RH Percent       |
| Start <i>82°F</i>         | End <i>82°F</i>  | <i>75°F</i>          | <i>72%</i>       |

Source Layout Sketch

BAG NOSE

Observation Point

Observer's Position

Sun Location Line

Draw North Arrow

TN MN

Side View

Stack With Plume

Sun

Wind

Longitude

Latitude

Declination

|                        |
|------------------------|
| Additional Information |
|                        |

|                              |   |   |   |   |   |      |   |    |   |   |   |
|------------------------------|---|---|---|---|---|------|---|----|---|---|---|
| Form Number                  | 0 | 4 | 7 | 1 | 1 | Page | 1 | of | 2 |   |   |
| Continued on VEO Form Number |   |   |   |   |   |      | 0 | 4  | 7 | 1 | 2 |

| Observation Date<br>4/23/99 |   |    | Time Zone |    | Start Time<br>10:45 | End Time<br>11:45 |
|-----------------------------|---|----|-----------|----|---------------------|-------------------|
| Sec<br>Min                  | 0 | 15 | 30        | 45 | Comments            |                   |
| 1                           | 0 | 0  | 0         | 0  |                     |                   |
| 2                           | 0 | 0  | 0         | 0  |                     |                   |
| 3                           | 0 | 0  | 0         | 0  |                     |                   |
| 4                           | 0 | 0  | 0         | 0  |                     |                   |
| 5                           | 0 | 0  | 0         | 0  |                     |                   |
| 6                           | 0 | 0  | 0         | 0  |                     |                   |
| 7                           | 0 | 0  | 0         | 0  |                     |                   |
| 8                           | 0 | 0  | 0         | 0  |                     |                   |
| 9                           | 0 | 0  | 0         | 0  |                     |                   |
| 10                          | 0 | 0  | 0         | 0  |                     |                   |
| 11                          | 0 | 0  | 0         | 0  |                     |                   |
| 12                          | 0 | 0  | 0         | 0  |                     |                   |
| 13                          | 0 | 0  | 0         | 0  |                     |                   |
| 14                          | 0 | 0  | 0         | 0  |                     |                   |
| 15                          | 0 | 0  | 0         | 0  |                     |                   |
| 16                          | 0 | 0  | 0         | 0  |                     |                   |
| 17                          | 0 | 0  | 0         | 0  |                     |                   |
| 18                          | 0 | 0  | 0         | 0  |                     |                   |
| 19                          | 0 | 0  | 0         | 0  |                     |                   |
| 20                          | 0 | 0  | 0         | 0  |                     |                   |
| 21                          | 0 | 0  | 0         | 0  |                     |                   |
| 22                          | 0 | 0  | 0         | 0  |                     |                   |
| 23                          | 0 | 0  | 0         | 0  |                     |                   |
| 24                          | 0 | 0  | 0         | 0  |                     |                   |
| 25                          | 0 | 0  | 0         | 0  |                     |                   |
| 26                          | 0 | 0  | 0         | 0  |                     |                   |
| 27                          | 0 | 0  | 0         | 0  |                     |                   |
| 28                          | 0 | 0  | 0         | 0  |                     |                   |
| 29                          | 0 | 0  | 0         | 0  |                     |                   |
| 30                          | 0 | 0  | 0         | 0  |                     |                   |

|                              |         |
|------------------------------|---------|
| Observer's Name (Print)      |         |
| Alvaro Castro                |         |
| Observer's Signature         | Date    |
| Alvaro Castro                | 4/23/98 |
| Organization                 |         |
| St. Johns River Water Park.  |         |
| Certified by                 | Date    |
| Eastern Technical Associates | 12/2/98 |



EPA

## VISIBLE EMISSION OBSERVATION FORM 1

Method Used (Circle One) Method 9 203A 203B Other: \_\_\_\_\_

Company Name St. Johns River Power Park.  
 Facility Name St. Johns River Power Park.  
 Street Address 11201 New Berlin Rd.  
 City Jacksonville State FL Zip 32226

Process Unit #1 Boiler Fuel Loading Unit # 1 Operating Mode Fuel Loading  
 Control Equipment Boilerhouse DC-4 Operating Mode 100% CAP.

Describe Emission Point

Height of Emiss. Pt. \_\_\_\_\_ Height of Emiss. Pt. Rel. to Observer \_\_\_\_\_  
 Start \_\_\_\_\_ End \_\_\_\_\_ Start \_\_\_\_\_ End \_\_\_\_\_  
 Distance to Emiss. Pt. \_\_\_\_\_ Direction to Emiss. Pt. (Degrees) \_\_\_\_\_  
 Start \_\_\_\_\_ End \_\_\_\_\_ Start \_\_\_\_\_ End \_\_\_\_\_

Vertical Angle to Obs. Pt. \_\_\_\_\_ Direction to Obs. Pt. (Degrees) \_\_\_\_\_  
 Start \_\_\_\_\_ End \_\_\_\_\_ Start \_\_\_\_\_ End \_\_\_\_\_  
 Distance and Direction to Observation Point from Emission Point \_\_\_\_\_  
 Start \_\_\_\_\_ End \_\_\_\_\_

Describe Emissions  
 Start \_\_\_\_\_ End \_\_\_\_\_  
 Emission Color \_\_\_\_\_ Water Droplet Plume \_\_\_\_\_  
 Start \_\_\_\_\_ End \_\_\_\_\_ Attached ☐ Detached ☐ None ☐

Describe Plume Background  
 Start \_\_\_\_\_ End \_\_\_\_\_  
 Background Color \_\_\_\_\_ Sky Conditions \_\_\_\_\_  
 Start \_\_\_\_\_ End \_\_\_\_\_ Start \_\_\_\_\_ End \_\_\_\_\_  
 Wind Speed \_\_\_\_\_ Wind Direction \_\_\_\_\_  
 Start \_\_\_\_\_ End \_\_\_\_\_ Start \_\_\_\_\_ End \_\_\_\_\_  
 Ambient Temp. \_\_\_\_\_ Wet Bulb Temp. \_\_\_\_\_ RH Percent \_\_\_\_\_  
 Start \_\_\_\_\_ End \_\_\_\_\_

Source Layout Sketch

Draw North Arrow ☐ TN ☐ MN

Observer's Position

Observation Point

Sun Location Line

Stack With Plume

Sun

Wind

Longitude \_\_\_\_\_ Latitude \_\_\_\_\_ Declination \_\_\_\_\_

Additional Information

Form Number 04712 Page 2 of 2  
Continued on VEO Form Number 04711Observation Date 4/23/99 Time Zone \_\_\_\_\_ Start Time 10:45 End Time 11:45

| Sec<br>Min | 0 | 15 | 30 | 45 | Comments |
|------------|---|----|----|----|----------|
| 1          | 0 | 0  | 0  | 0  |          |
| 2          | 0 | 0  | 0  | 0  |          |
| 3          | 0 | 0  | 0  | 0  |          |
| 4          | 0 | 0  | 0  | 0  |          |
| 5          | 0 | 0  | 0  | 0  |          |
| 6          | 0 | 0  | 0  | 0  |          |
| 7          | 0 | 0  | 0  | 0  |          |
| 8          | 0 | 0  | 0  | 0  |          |
| 9          | 0 | 0  | 0  | 0  |          |
| 10         | 0 | 0  | 0  | 0  |          |
| 11         | 0 | 0  | 0  | 0  |          |
| 12         | 0 | 0  | 0  | 0  |          |
| 13         | 0 | 0  | 0  | 0  |          |
| 14         | 0 | 0  | 0  | 0  |          |
| 15         | 0 | 0  | 0  | 0  |          |
| 16         | 0 | 0  | 0  | 0  |          |
| 17         | 0 | 0  | 0  | 0  |          |
| 18         | 0 | 0  | 0  | 0  |          |
| 19         | 0 | 0  | 0  | 0  |          |
| 20         | 0 | 0  | 0  | 0  |          |
| 21         | 0 | 0  | 0  | 0  |          |
| 22         | 0 | 0  | 0  | 0  |          |
| 23         | 0 | 0  | 0  | 0  |          |
| 24         | 0 | 0  | 0  | 0  |          |
| 25         | 0 | 0  | 0  | 0  |          |
| 26         | 0 | 0  | 0  | 0  |          |
| 27         | 0 | 0  | 0  | 0  |          |
| 28         | 0 | 0  | 0  | 0  |          |
| 29         | 0 | 0  | 0  | 0  |          |
| 30         | 0 | 0  | 0  | 0  |          |

Observer's Name (Print) Alvaro Castro  
 Observer's Signature Alvaro Castro Date 4/23/99  
 Organization St. Johns River Power Park  
 Certified by Eastern Technical Associates Date 12/2/98

EPA

## VISIBLE EMISSION OBSERVATION FORM 1

Method Used (Circle One)  
Method 9 203A 203B Other: \_\_\_\_\_

Company Name St. Johns River Power Park  
 Facility Name St. Johns River Power Park  
 Street Address 11201 New Berlin Rd.  
 City Jacksonville State FL Zip 32226

Process UNIT #2 Boiler Fuel Loading Unit # 2 Operating Mode FUEL LOADING  
 Control Equipment BAGHOUSE DCS Operating Mode 100% CAP.

Describe Emission Point  
BAGHOUSE EFFLUENT

Height of Emiss. Pt. Start 7' End 7' Height of Emiss. Pt. Rel. to Observer Start 2' End 2'  
 Distance to Emiss. Pt. Start 25' End 25' Direction to Emiss. Pt. (Degrees) Start 262° End 262°

Vertical Angle to Obs. Pt. Start 5° End 5° Direction to Obs. Pt. (Degrees) Start 270° End 270°  
 Distance and Direction to Observation Point from Emission Point Start 5' 90° End 5' 90°

Describe Emissions  
 Start NONE End NONE  
 Emission Color Start NONE End NONE Water Droplet Plume Attached ☐ Detached ☐ None ☒

Describe Plume Background  
 Start OPEN SKY End OPEN SKY  
 Background Color Start Blue End Blue Sky Conditions Start clear End clear  
 Wind Speed Start 2-5 End 2-5 Wind Direction Start SW End SW  
 Ambient Temp. Start 77°F End 77°F Wet Bulb Temp. Start 67°F End 67°F RH Percent 59%

Source Layout Sketch

Draw North Arrow ☐ TN ☐ MN

Longitude \_\_\_\_\_ Latitude \_\_\_\_\_ Declination \_\_\_\_\_

Additional Information \_\_\_\_\_

Form Number 04721 Page 1 of 2  
 Continued on VEO Form Number 04722

| Observation Date |   | Time Zone |    |    |          | Start Time | End Time |
|------------------|---|-----------|----|----|----------|------------|----------|
| 3/25/99          |   |           |    |    |          | 1150       | 1250     |
| Sec<br>Min       | 0 | 15        | 30 | 45 | Comments |            |          |
| 1.               | 0 | 0         | 0  | 0  |          |            |          |
| 2                | 0 | 0         | 0  | 0  |          |            |          |
| 3                | 0 | 0         | 0  | 0  |          |            |          |
| 4                | 0 | 0         | 0  | 0  |          |            |          |
| 5                | 0 | 0         | 0  | 0  |          |            |          |
| 6                | 0 | 0         | 0  | 0  |          |            |          |
| 7                | 0 | 0         | 0  | 0  |          |            |          |
| 8                | 0 | 0         | 0  | 0  |          |            |          |
| 9                | 0 | 0         | 0  | 0  |          |            |          |
| 10               | 0 | 0         | 0  | 0  |          |            |          |
| 11               | 0 | 0         | 0  | 0  |          |            |          |
| 12               | 0 | 0         | 0  | 0  |          |            |          |
| 13               | 0 | 0         | 0  | 0  |          |            |          |
| 14               | 0 | 0         | 0  | 0  |          |            |          |
| 15               | 0 | 0         | 0  | 0  |          |            |          |
| 16               | 0 | 0         | 0  | 0  |          |            |          |
| 17               | 0 | 0         | 0  | 0  |          |            |          |
| 18               | 0 | 0         | 0  | 0  |          |            |          |
| 19               | 0 | 0         | 0  | 0  |          |            |          |
| 20               | 0 | 0         | 0  | 0  |          |            |          |
| 21               | 0 | 0         | 0  | 0  |          |            |          |
| 22               | 0 | 0         | 0  | 0  |          |            |          |
| 23               | 0 | 0         | 0  | 0  |          |            |          |
| 24               | 0 | 0         | 0  | 0  |          |            |          |
| 25               | 0 | 0         | 0  | 0  |          |            |          |
| 26               | 0 | 0         | 0  | 0  |          |            |          |
| 27               | 0 | 0         | 0  | 0  |          |            |          |
| 28               | 0 | 0         | 0  | 0  |          |            |          |
| 29               | 0 | 0         | 0  | 0  |          |            |          |
| 30               | 0 | 0         | 0  | 0  |          |            |          |

Observer's Name (Print) Alvaro Castro  
 Observer's Signature Alvaro Castro Date 3/25/99  
 Organization St. Johns River Power Park  
 Certified by Estera Technical Services Date 12/2/98

EPA

## VISIBLE EMISSION OBSERVATION FORM 1

Method Used (Circle One)  
 Method 9 203A 203B Other: \_\_\_\_\_

Company Name  
*St. Johns River Power Park.*  
 Facility Name  
*St. Johns River Power Park*  
 Street Address  
*11201 New Berlin Rd.*  
 City *Tacksville* State *FL* Zip *32246*

Process  
*Unit #2 Boiler Fuel Loading* Unit # *2* Operating Mode  
*Fuel Loading*  
 Control Equipment  
*Gas Hous DC 5* Operating Mode  
*100% CAP.*

Describe Emission Point

Height of Emiss. Pt. Start \_\_\_\_\_ End \_\_\_\_\_ Height of Emiss. Pt. Rel. to Observer Start \_\_\_\_\_ End \_\_\_\_\_  
 Distance to Emiss. Pt. Start \_\_\_\_\_ End \_\_\_\_\_ Direction to Emiss. Pt. (Degrees) Start \_\_\_\_\_ End \_\_\_\_\_

Vertical Angle to Obs. Pt. Start \_\_\_\_\_ End \_\_\_\_\_ Direction to Obs. Pt. (Degrees) Start \_\_\_\_\_ End \_\_\_\_\_  
 Distance and Direction to Observation Point from Emission Point Start \_\_\_\_\_ End \_\_\_\_\_

Describe Emissions

Start \_\_\_\_\_ End \_\_\_\_\_ Emission Color \_\_\_\_\_ Water Droplet Plume  
 Start \_\_\_\_\_ End \_\_\_\_\_ Attached ☐ Detached ☐ None ☐

Describe Plume Background

Start \_\_\_\_\_ End \_\_\_\_\_ Background Color \_\_\_\_\_ Sky Conditions Start \_\_\_\_\_ End \_\_\_\_\_  
 Wind Speed Start \_\_\_\_\_ End \_\_\_\_\_ Wind Direction Start \_\_\_\_\_ End \_\_\_\_\_  
 Ambient Temp. Start \_\_\_\_\_ End \_\_\_\_\_ Wet Bulb Temp. \_\_\_\_\_ RH Percent \_\_\_\_\_

Source Layout Sketch

Draw North Arrow  
☐ TN ☐ MN

X Observation Point

Observer's Position

140°

Sun Location Line

Stack With Plume

Sun

Wind

Longitude \_\_\_\_\_ Latitude \_\_\_\_\_ Elevation \_\_\_\_\_

Additional Information

Form Number *04722* Page *2* of *2*  
 Continued on VEO Form Number *04721*

| Observation Date | Time Zone | Start Time  | End Time    |    |
|------------------|-----------|-------------|-------------|----|
|                  |           | <i>1150</i> | <i>1250</i> |    |
| Sec              | 0         | 15          | 30          | 45 |
| Min              |           |             |             |    |
| 1                | 0         | 0           | 0           | 0  |
| 2                | 0         | 0           | 0           | 0  |
| 3                | 0         | 0           | 0           | 0  |
| 4                | 0         | 0           | 0           | 0  |
| 5                | 0         | 0           | 0           | 0  |
| 6                | 0         | 0           | 0           | 0  |
| 7                | 0         | 0           | 0           | 0  |
| 8                | 0         | 0           | 0           | 0  |
| 9                | 0         | 0           | 0           | 0  |
| 10               | 0         | 0           | 0           | 0  |
| 11               | 0         | 0           | 0           | 0  |
| 12               | 0         | 0           | 0           | 0  |
| 13               | 0         | 0           | 0           | 0  |
| 14               | 0         | 0           | 0           | 0  |
| 15               | 0         | 0           | 0           | 0  |
| 16               | 0         | 0           | 0           | 0  |
| 17               | 0         | 0           | 0           | 0  |
| 18               | 0         | 0           | 0           | 0  |
| 19               | 0         | 0           | 0           | 0  |
| 20               | 0         | 0           | 0           | 0  |
| 21               | 0         | 0           | 0           | 0  |
| 22               | 0         | 0           | 0           | 0  |
| 23               | 0         | 0           | 0           | 0  |
| 24               | 0         | 0           | 0           | 0  |
| 25               | 0         | 0           | 0           | 0  |
| 26               | 0         | 0           | 0           | 0  |
| 27               | 0         | 0           | 0           | 0  |
| 28               | 0         | 0           | 0           | 0  |
| 29               | 0         | 0           | 0           | 0  |
| 30               | 0         | 0           | 0           | 0  |

Observer's Name (Print)  
*Alvaro Castro*  
 Observer's Signature  
*Alvaro Castro* Date *2/25/99*  
 Organization  
*St. Johns River Power Park.*  
 Certified by  
*Eastern Technical Services* Date *12/2/98*

VEOF1.1

**EMISSIONS UNIT EU047**  
**Fuel Storage Bins (DC-4 & DC-5)**

**ATTACHMENT EU047-05**  
**Emissions Estimates**

**Foster Wheeler Environmental Corporation**  
**EXCEL 7.0 Worksheet Calculation**

**By:** D. Graziani, P.E.  
**Date:** 11/3/98

**Cal. No.:** 901103DJG01  
**Project No.:** 7830.0020.0056

**Ckd. By:** Kim Evans, P.E.  
**Date:** 11/10/98

**Revision No.:** 1

**Project:** St. Johns River Power Park PSD Permit Update

**Subject:** Emissions Estimates for the Head House & Storage Bins (DC-5) with 2 Transfer Points

**Emissions Data**

| Raw Materials  | Constant | Belt Speed<br>(MPH) | H2O<br>(%) | Particle Size Multipliers |      |       | Emission Factors (lb/ton) |         |         |
|----------------|----------|---------------------|------------|---------------------------|------|-------|---------------------------|---------|---------|
|                |          |                     |            | PM                        | PM10 | PM2.5 | PM                        | PM10    | PM2.5   |
| Coal           | 0.0032   | 6.25                | 5          | 0.74                      | 0.35 | 0.11  | 0.00088                   | 0.00042 | 0.00013 |
| Petroleum Coke | 0.0032   | 6.25                | 5          | 0.74                      | 0.35 | 0.11  | 0.00088                   | 0.00042 | 0.00013 |
| Limestone      | 0.0032   | 6.25                | 6.5        | 0.74                      | 0.35 | 0.11  | 0.00061                   | 0.00029 | 0.00009 |

**Operating Data**

| Raw Materials  | Operating Rates |         |
|----------------|-----------------|---------|
|                | (TPH)           | (TPY)   |
| Coal           | 2000            | 5126352 |
| Petroleum Coke | 2000            | 5126352 |
| Limestone      | 0               | 0       |

**Emission Rates - Uncontrolled**

| Raw Materials  | Short-Term    |                 |                  |             |               |                |
|----------------|---------------|-----------------|------------------|-------------|---------------|----------------|
|                | PM<br>(lb/hr) | PM10<br>(lb/hr) | PM2.5<br>(lb/hr) | PM<br>(g/s) | PM10<br>(g/s) | PM2.5<br>(g/s) |
| Coal           | 3.51          | 1.66            | 0.52             | 0.443       | 0.209         | 0.066          |
| Petroleum Coke | 3.51          | 1.66            | 0.52             | 0.443       | 0.209         | 0.066          |
| Limestone      | 0             | 0               | 0                | 0           | 0             | 0              |

2 Transfer Points

2 Transfer Points

**Emission Rates - Controlled 99.50%**

| Raw Materials  | Short-Term    |                 |                  |             |               |                |
|----------------|---------------|-----------------|------------------|-------------|---------------|----------------|
|                | PM<br>(lb/hr) | PM10<br>(lb/hr) | PM2.5<br>(lb/hr) | PM<br>(g/s) | PM10<br>(g/s) | PM2.5<br>(g/s) |
| Coal           | 0.018         | 0.008           | 0.003            | 0.00221     | 0.00105       | 0.00033        |
| Petroleum Coke | 0.018         | 0.008           | 0.003            | 0.00221     | 0.00105       | 0.00033        |
| Limestone      | 0             | 0               | 0                | 0           | 0             | 0              |

**Emission Rates - Uncontrolled**

| Raw Materials  | Long-Term   |               |                |             |               |                |
|----------------|-------------|---------------|----------------|-------------|---------------|----------------|
|                | PM<br>(TPY) | PM10<br>(TPY) | PM2.5<br>(TPY) | PM<br>(g/s) | PM10<br>(g/s) | PM2.5<br>(g/s) |
| Coal           | 4.50        | 2.13          | 0.67           | 0.130       | 0.061         | 0.019          |
| Petroleum Coke | 4.50        | 2.13          | 0.67           | 0.130       | 0.061         | 0.019          |
| Limestone      | 0.00        | 0.00          | 0.00           | 0.000       | 0.000         | 0.000          |

2 Transfer Points

2 Transfer Points

**Emission Rates - Controlled 99.50%**

| Raw Materials  | Long-Term   |               |                |             |               |                |
|----------------|-------------|---------------|----------------|-------------|---------------|----------------|
|                | PM<br>(TPY) | PM10<br>(TPY) | PM2.5<br>(TPY) | PM<br>(g/s) | PM10<br>(g/s) | PM2.5<br>(g/s) |
| Coal           | 0.023       | 0.011         | 0.003          | 0.00065     | 0.00031       | 0.00010        |
| Petroleum Coke | 0.023       | 0.011         | 0.003          | 0.00065     | 0.00031       | 0.00010        |
| Limestone      | 0           | 0             | 0              | 0           | 0             | 0              |

**References:**

Emission Factor - AP42 Chapter 13.2.4 Aggregate Handling and Storage Piles  
 Belt Speed = FEA Operational Data  
 Moisture Contents - JEA Operational Data  
 Transfer Rates - JEA Operational Data

**Foster Wheeler Environmental Corporation**  
**EXCEL 7.0 Worksheet Calculation**

**By:** D. Graziani, P.E.  
**Date:** 11/3/98

**Cal. No.:** 901103DJG01  
**Project No.:** 7830.0020.0056

**Ckd. By:** Kim Evans, P.E.  
**Date:** 11/10/98

**Revision No.:** 1

**Project:** St. Johns River Power Park PSD Permit Update  
**Subject:** Emissions Estimates for the Unit #1 Storage Bins (DC-4)

**Emissions Data**

| Raw Materials  | Constant | Belt Speed<br>(MPH) | H2O<br>(%) | Particle Size Multipliers |      |       | Emission Factors (lb/ton) |         |         |
|----------------|----------|---------------------|------------|---------------------------|------|-------|---------------------------|---------|---------|
|                |          |                     |            | PM                        | PM10 | PM2.5 | PM                        | PM10    | PM2.5   |
| Coal           | 0.0032   | 6.25                | 5          | 0.74                      | 0.35 | 0.11  | 0.00088                   | 0.00042 | 0.00013 |
| Petroleum Coke | 0.0032   | 6.25                | 5          | 0.74                      | 0.35 | 0.11  | 0.00088                   | 0.00042 | 0.00013 |
| Limestone      | 0.0032   | 6.25                | 6.5        | 0.74                      | 0.35 | 0.11  | 0.00061                   | 0.00029 | 0.00009 |

**Operating Data**

| Raw Materials  | Operating Rates |         |
|----------------|-----------------|---------|
|                | (TPH)           | (TPY)   |
| Coal           | 2000            | 5126352 |
| Petroleum Coke | 2000            | 5126352 |
| Limestone      | 0               | 0       |

**Emission Rates - Uncontrolled**

| Raw Materials  | Short-Term    |                 |                  |             |               |                |
|----------------|---------------|-----------------|------------------|-------------|---------------|----------------|
|                | PM<br>(lb/hr) | PM10<br>(lb/hr) | PM2.5<br>(lb/hr) | PM<br>(g/s) | PM10<br>(g/s) | PM2.5<br>(g/s) |
| Coal           | 3.51          | 1.66            | 0.52             | 0.443       | 0.209         | 0.066          |
| Petroleum Coke | 3.51          | 1.66            | 0.52             | 0.443       | 0.209         | 0.066          |
| Limestone      | 0             | 0               | 0                | 0           | 0             | 0              |

2 Transfer Points  
2 Transfer Points

**Emission Rates - Controlled 99.50%**

| Raw Materials  | Short-Term    |                 |                  |             |               |                |
|----------------|---------------|-----------------|------------------|-------------|---------------|----------------|
|                | PM<br>(lb/hr) | PM10<br>(lb/hr) | PM2.5<br>(lb/hr) | PM<br>(g/s) | PM10<br>(g/s) | PM2.5<br>(g/s) |
| Coal           | 0.018         | 0.008           | 0.003            | 0.00221     | 0.00105       | 0.00033        |
| Petroleum Coke | 0.018         | 0.008           | 0.003            | 0.00221     | 0.00105       | 0.00033        |
| Limestone      | 0             | 0               | 0                | 0           | 0             | 0              |

**Emission Rates - Uncontrolled**

| Raw Materials  | Long-Term   |               |                |             |               |                |
|----------------|-------------|---------------|----------------|-------------|---------------|----------------|
|                | PM<br>(TPY) | PM10<br>(TPY) | PM2.5<br>(TPY) | PM<br>(g/s) | PM10<br>(g/s) | PM2.5<br>(g/s) |
| Coal           | 4.50        | 2.13          | 0.67           | 0.130       | 0.061         | 0.019          |
| Petroleum Coke | 4.50        | 2.13          | 0.67           | 0.130       | 0.061         | 0.019          |
| Limestone      | 0           | 0             | 0              | 0           | 0             | 0              |

2 Transfer Points  
2 Transfer Points

**Emission Rates - Controlled 99.50%**

| Raw Materials  | Long-Term   |               |                |             |               |                |
|----------------|-------------|---------------|----------------|-------------|---------------|----------------|
|                | PM<br>(TPY) | PM10<br>(TPY) | PM2.5<br>(TPY) | PM<br>(g/s) | PM10<br>(g/s) | PM2.5<br>(g/s) |
| Coal           | 0.023       | 0.011         | 0.003          | 0.00065     | 0.00031       | 0.00010        |
| Petroleum Coke | 0.023       | 0.011         | 0.003          | 0.00065     | 0.00031       | 0.00010        |
| Limestone      | 0           | 0             | 0              | 0           | 0             | 0              |

**References:**

Emission Factor - AP42 Chapter 13.2.4 Aggregate Handling and Storage Piles  
Belt Speed = FEA Operational Data  
Moisture Contents - JEA Operational Data  
Transfer Rates - JEA Operational Data

### III. EMISSIONS UNIT INFORMATION

#### A. TYPE OF EMISSIONS UNIT (Regulated and Unregulated Emissions Units)

Emissions Unit Information Section 5

SJRPP - Railcar Unloader, Limestone Transfer Points (LDC-1)

#### Type of Emissions Unit Addressed in This Section

1. Regulated or Unregulated Emissions Unit? Check one :

- ☒ [ X ] 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.

2. Single Process, Group of Processes, or Fugitive Only? 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).
- ☒ [ X ] 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.

III. Part 1 - 1

DEP Form No. 62-210.900(1) - Form

Effective : 3-21-96

**B. GENERAL EMISSIONS UNIT INFORMATION  
(Regulated and Unregulated Emissions Units)**

**Emissions Unit Description and Status**

|                                                                                                                                               |                                                                                           |                                                                     |
|-----------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------|---------------------------------------------------------------------|
| 1. Description of Emissions Unit Addressed in This Section :<br><br>SJRPP - Railcar Unloader, Limestone Transfer Points (LDC-1)               |                                                                                           |                                                                     |
| 2. Emissions Unit Identification Number : 048<br><input type="checkbox"/> No Corresponding ID <input type="checkbox"/> Unknown                |                                                                                           |                                                                     |
| 3. Emissions Unit Status<br>Code :                      A                                                                                     | 4. Acid Rain Unit?<br><input type="checkbox"/> Yes <input checked="" type="checkbox"/> No | 5. Emissions Unit Major<br>Group SIC Code :                      49 |
| 6. Emissions Unit Comment :<br><br>Emissions Unit consists of the underground transfer points associated with the limestone railcar unloader. |                                                                                           |                                                                     |



**Emissions Unit Information Section**      5

SJRPP - Railcar Unloader, Limestone Transfer Points (LDC-1)

**Emissions Unit Control Equipment**      1

1. Description :

Emissions from the transfer points are controlled by use of a baghouse.

2. Control Device or Method Code :      18

**C. EMISSIONS UNIT DETAIL INFORMATION**  
**(Regulated Emissions Units Only)**

**Emissions Unit Information Section**      5  
 SJRPP - Railcar Unloader, Limestone Transfer Points (LDC-1)

**Emissions Unit Details**

|                                       |                    |  |
|---------------------------------------|--------------------|--|
| 1. Initial Startup Date :             | 01-Dec-1986        |  |
| 2. Long-term Reserve Shutdown Date :  |                    |  |
| 3. Package Unit :<br>Manufacturer :   | Model Number :     |  |
| 4. Generator Nameplate Rating :       | MW                 |  |
| 5. Incinerator Information :          |                    |  |
| Dwell Temperature :                   | Degrees Fahrenheit |  |
| Dwell Time :                          | Seconds            |  |
| Incinerator Afterburner Temperature : | Degrees Fahrenheit |  |

**Emissions Unit Operating Capacity**

|                                          |          |               |
|------------------------------------------|----------|---------------|
| 1. Maximum Heat Input Rate :             | mmBtu/hr |               |
| 2. Maximum Incinerator Rate :            | lb/hr    | tons/day      |
| 3. Maximum Process or Throughput Rate :  | 2000     | tons per hour |
| 4. Maximum Production Rate :             |          |               |
| 5. Operating Capacity Comment :          |          |               |
| Maximum rate is limited by Conveyor L-0. |          |               |

**Emissions Unit Operating Schedule**

|                                        |                  |
|----------------------------------------|------------------|
| Requested Maximum Operating Schedule : |                  |
| 24 hours/day                           | 7 days/week      |
| 52 weeks/year                          | 8,760 hours/year |

**D. EMISSIONS UNIT REGULATIONS  
(Regulated Emissions Units Only)**

**Emissions Unit Information Section**     5  
SJRPP - Railcar Unloader, Limestone Transfer Points (LDC-1)

**Rule Applicability Analysis**

Unit was subject to PSD Review including the application of BACT.

**List of Applicable Regulations**

Rule 62-210.300(1), F.A.C., Air Construction Permits

Rule 62-210.550, F.A.C., Stack Height Policy

Rule 62-210.650, F.A.C., Circumvention

Rule 62-297.310, F.A.C., General Test Requirements

Rule 62-297.401(5) & (9), F.A.C., EPA Method 5 and 9

Rule 62-210.300(5), F.A.C., Notification of Start-up

Jacksonville Environmental Protection Board, Rule 2 - Air Pollution

Rule 2.105, Maintenance of Air Pollution Control Devices

Rule 2.301, Adoption of Chapter 62-210, F.A.C., (As Noted)

Rule 2.1101, Adoption of Chapter 62-297, F.A.C., (As Noted)

Rule 62-204.800(7)(e), F.A.C., Adoption of the NSPS Appendices (As Noted)

Rule 62-210.700(1), (4), & (6), F.A.C., Excess Emissions

**III. Part 6b - 1**

DEP Form No. 62-210.900(1) - Form  
Effective : 3-21-96

## E. EMISSION POINT (STACK/VENT) INFORMATION

Emissions Unit Information Section 5

SJRPP - Railcar Unloader, Limestone Transfer Points (LDC-1)

Emission Point Description and Type :

|                                                                                                                            |                                                 |
|----------------------------------------------------------------------------------------------------------------------------|-------------------------------------------------|
| 1. Identification of Point on Plot Plan or Flow Diagram :                                                                  | LDC-1                                           |
| 2. Emission Point Type Code :                                                                                              | 2                                               |
| 3. Descriptions of Emission Points Comprising this Emissions Unit for VE Tracking :<br>(limit to 100 characters per point) |                                                 |
| 4. ID Numbers or Descriptions of Emission Units with this Emission Point in Common :                                       | Dust Collector LDC-1 - four (4) Transfer Points |
| 5. Discharge Type Code :                                                                                                   | V                                               |
| 6. Stack Height :                                                                                                          | 30 feet                                         |
| 7. Exit Diameter :                                                                                                         | 1.7 feet                                        |
| 8. Exit Temperature :                                                                                                      | 68 °F                                           |
| 9. Actual Volumetric Flow Rate :                                                                                           | 7600 acfm                                       |
| 10. Percent Water Vapor :                                                                                                  | 2.00 %                                          |
| 11. Maximum Dry Standard Flow Rate :                                                                                       | 7600 dscfm                                      |
| 12. Nonstack Emission Point Height :                                                                                       | 0 feet                                          |
| 13. Emission Point UTM Coordinates :                                                                                       |                                                 |
| Zone : 17                                                                                                                  | East (km) : 447.528 North (km) : 3366.532       |
| 14. Emission Point Comment :                                                                                               |                                                 |

III. Part 7a - 1

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Effective : 3-21-96

## F. SEGMENT (PROCESS/FUEL) INFORMATION

Emissions Unit Information Section 5

SJRPP - Railcar Unloader, Limestone Transfer Points (LDC-1)

**Segment Description and Rate :** Segment 1

|                                                                                                    |                                     |
|----------------------------------------------------------------------------------------------------|-------------------------------------|
| 1. Segment Description (Process/Fuel Type and Associated Operating Method/Mode) :<br><br>Limestone |                                     |
| 2. Source Classification Code (SCC) : 30501099                                                     |                                     |
| 3. SCC Units : Tons Transferred Or Handled                                                         |                                     |
| 4. Maximum Hourly Rate : 2,000.00                                                                  | 5. Maximum Annual Rate : 600,000.00 |
| 6. Estimated Annual Activity Factor : 0.00                                                         |                                     |
| 7. Maximum Percent Sulfur :                                                                        | 8. Maximum Percent Ash :            |
| 9. Million Btu per SCC Unit :                                                                      |                                     |
| 10. Segment Comment :                                                                              |                                     |

III. Part 8 - 1

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**G. EMISSIONS UNIT POLLUTANTS**  
**(Regulated and Unregulated Emissions Units)**

**Emissions Unit Information Section**     5  
SJRPP - Railcar Unloader, Limestone Transfer Points (LDC-1)

| 1. Pollutant Emitted | 2. Primary Control Device Code | 3. Secondary Control Device Code | 4. Pollutant Regulatory Code |
|----------------------|--------------------------------|----------------------------------|------------------------------|
| 1 - PM               | 018                            |                                  | EL                           |
| 2 - PM10             | 017                            |                                  | EL                           |

III. Part 9a - 1

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**H. EMISSIONS UNIT POLLUTANT DETAIL INFORMATION**  
**(Regulated Emissions Units Only - Emissions Limited Pollutants Only)**

**Emissions Unit Information Section**      5  
SJRPP - Railcar Unloader, Limestone Transfer Points (LDC-1)

**Pollutant Potential/Estimated Emissions :**      Pollutant      1

|                                                                                   |  |  |
|-----------------------------------------------------------------------------------|--|--|
| 1. Pollutant Emitted : <b>PM</b>                                                  |  |  |
| 2. Total Percent Efficiency of Control :      99.50      %                        |  |  |
| 3. Potential Emissions :<br><div>0.0240000 lb/hour      0.0036000 tons/year</div> |  |  |
| 4. Synthetically Limited?<br>[   ] Yes      [X ] No                               |  |  |
| 5. Range of Estimated Fugitive/Other Emissions:<br><div>to      tons/year</div>   |  |  |
| 6. Emissions Factor      0      Units lb/ton<br>Reference AP-42, (EF=0.0006)      |  |  |
| 7. Emissions Method Code :      3                                                 |  |  |
| 8. Calculations of Emissions :<br><br>See Attachment EU048-05                     |  |  |
| 9. Pollutant Potential/Estimated Emissions Comment :                              |  |  |

III. Part 9b - 1



**H. EMISSIONS UNIT POLLUTANT DETAIL INFORMATION**  
**(Regulated Emissions Units Only - Emissions Limited Pollutants Only)**

**Emissions Unit Information Section**      5  
SJRPP - Railcar Unloader, Limestone Transfer Points (LDC-1)

**Pollutant Potential/Estimated Emissions :**      Pollutant      2

|                                                                                                                                                                  |                   |                     |
|------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------|---------------------|
| 1. Pollutant Emitted : <b>PM10</b>                                                                                                                               |                   |                     |
| 2. Total Percent Efficiency of Control :                                                                                                                         | 99.50             | %                   |
| 3. Potential Emissions :                                                                                                                                         | 0.0120000 lb/hour | 0.0020000 tons/year |
| 4. Synthetically Limited?<br>[   ] Yes                      [X ] No                                                                                              |                   |                     |
| 5. Range of Estimated Fugitive/Other Emissions:<br><div style="text-align: right; margin-right: 100px;">to</div> <div style="text-align: right;">tons/year</div> |                   |                     |
| 6. Emissions Factor                                                                                                                                              | 0                 | Units lb/ton        |
| Reference    AP-42, (EF=0.0.0003)                                                                                                                                |                   |                     |
| 7. Emissions Method Code :      3                                                                                                                                |                   |                     |
| 8. Calculations of Emissions :<br><br>See Attachment EU048-05                                                                                                    |                   |                     |
| 9. Pollutant Potential/Estimated Emissions Comment :                                                                                                             |                   |                     |

**Emissions Unit Information Section**      5  
SJRPP - Railcar Unloader, Limestone Transfer Points (LDC-1)

**Pollutant Information Section**      1

**Allowable Emissions**      1

|                                                                                     |                                                                                                    |                 |                |
|-------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------|-----------------|----------------|
| 1. Basis for Allowable Emissions Code :                                             | OTHER                                                                                              |                 |                |
| 2. Future Effective Date of Allowable Emissions :                                   | 01-Aug-1999                                                                                        |                 |                |
| 3. Requested Allowable Emissions and Units :                                        | 5.00                                                                                               | percent opacity |                |
| 4. Equivalent Allowable Emissions :                                                 | 0.02                                                                                               | lb/hour         | 0.00 tons/year |
| 5. Method of Compliance :                                                           | Stack Test Waiver Requested Rule 62-297.310(7)(c), F.A.C.                                          |                 |                |
| 6. Pollutant Allowable Emissions Comment (Desc. of Related Operating Method/Mode) : | Updated BACT revised from 10% opacity to a requested no visible emissions limitation (5% Opacity). |                 |                |

**Emissions Unit Information Section**      5  
SJRPP - Railcar Unloader, Limestone Transfer Points (LDC-1)

**Pollutant Information Section**      2

**Allowable Emissions**      1

|                                                                                     |  |                                                                                                    |                 |      |           |
|-------------------------------------------------------------------------------------|--|----------------------------------------------------------------------------------------------------|-----------------|------|-----------|
| 1. Basis for Allowable Emissions Code :                                             |  | OTHER                                                                                              |                 |      |           |
| 2. Future Effective Date of Allowable Emissions :                                   |  | 01-Aug-1999                                                                                        |                 |      |           |
| 3. Requested Allowable Emissions and Units :                                        |  | 5.00                                                                                               | percent opacity |      |           |
| 4. Equivalent Allowable Emissions :                                                 |  | 0.01                                                                                               | lb/hour         | 0.00 | tons/year |
| 5. Method of Compliance :                                                           |  | Stack Test Waiver Requested Rule 62-297.310(7)(c), F.A.C.                                          |                 |      |           |
| 6. Pollutant Allowable Emissions Comment (Desc. of Related Operating Method/Mode) : |  | Updated BACT revised from 10% opacity to a requested no visible emissions limitation (5% Opacity). |                 |      |           |

**I. VISIBLE EMISSIONS INFORMATION**  
**(Regulated Emissions Units Only)**

**Emissions Unit Information Section**     5

SJRPP - Railcar Unloader, Limestone Transfer Points (LDC-1)

**Visible Emissions Limitation :**   Visible Emissions Limitation     1

|                                                                                                                                                                                                                                                                                             |
|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 1. Visible Emissions Subtype :                      05                                                                                                                                                                                                                                      |
| 2. Basis for Allowable Opacity :                      RULE                                                                                                                                                                                                                                  |
| 3. Requested Allowable Opacity :<br><div style="text-align: right; margin-top: 10px;">Normal Conditions :            5                      %<br/>Exceptional Conditions :       100                   %<br/>Maximum Period of Excess Opacity Allowed :                      min/hour</div> |
| 4. Method of Compliance :<br><br>EPA Method 9                                                                                                                                                                                                                                               |
| 5. Visible Emissions Comment :<br><br>Updated BACT revised from 10% opacity to a requested no visible emissions limitation (5% Opacity).<br><br>Excess Emissions based on 2 hours per 24-hour period                                                                                        |

**J. CONTINUOUS MONITOR INFORMATION  
(Regulated Emissions Units Only)**

**Emissions Unit Information Section**

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## K. PREVENTION OF SIGNIFICANT DETERIORATION (PSD) INCREMENT TRACKING INFORMATION

Emissions Unit Information Section 5

SJRPP - Railcar Unloader, Limestone Transfer Points (LDC-1)

### PSD Increment Consumption Determination

#### 1. Increment Consuming for Particulate Matter or Sulfur Dioxide?

- ☐ The emissions unit is undergoing PSD review as part of this application, or has undergone PSD review previously, for particulate matter or sulfur dioxide. If so, emissions unit consumes increment.
- ☐ The facility addressed in this application is classified as an EPA major source pursuant to paragraph (c) of the definition of "major source of air pollution" in Chapter 62-213, F.A.C., and the emissions unit addressed in this section commenced (or will commence) construction after January 6, 1975. If so, baseline emissions are zero, and emissions unit consumes increment.
- ☐ The facility addressed in this application is classified as an EPA major source, and the emissions unit began initial operation after January 6, 1975, but before December 27, 1977. If so, baseline emissions are zero, and emissions unit consumes increment.
- ☒ For any facility, the emissions unit began (or will begin) initial operation after December 27, 1977. If so, baseline emissions are zero, and emissions unit consumes increment.
- ☐ None of the above apply. If so, the baseline emissions of the emissions unit are nonzero. In such case, additional analysis, beyond the scope of this application, is needed to determine whether changes in emissions have occurred (or will occur) after the baseline date that may consume or expand increment.

III. Part 12 - 1

## 2. Increment Consuming for Nitrogen Dioxide?

- ☐ The emissions unit addressed in this section is undergoing PSD review as part of this application, or has undergone PSD review previously, for nitrogen dioxide. If so, emissions unit consumes increment.
- ☐ The facility addressed in this application is classified as an EPA major source pursuant to paragraph (c) of the definition of "major source of air pollution" in Chapter 62-213, F.A.C., and the emissions unit addressed in this section commenced (or will commence) construction after February 8, 1988. If so, baseline emissions are zero, and emissions unit consumes increment.
- ☐ The facility addressed in this application is classified as an EPA major source, and the emissions unit began initial operation after February 8, 1988, but before March 28, 1988. If so, baseline emissions are zero, and emissions unit consumes increment.
- ☐ For any facility, the emissions unit began (or will begin) initial operation after March 28, 1988. If so, baseline emissions are zero, and emissions unit consumes increment.
- ☐ None of the above apply. If so, baseline emissions of the emissions unit are nonzero. In such case, additional analysis, beyond the scope of this application, is needed to determine whether changes in emissions have occurred (or will occur) after the baseline date that may consume or expand increment.

### 3. Increment Consuming/Expanding Code :

PM : C

SO2 : U

NO2 : U

### 4. Baseline Emissions :

PM : 0.0000 lb/hour

SO2 : lb/hour

NO2 : 0.0000 tons/year

tons/year

tons/year

### 5. PSD Comment :

## L. EMISSIONS UNIT SUPPLEMENTAL INFORMATION

### Emissions Unit Information Section 5

SJRPP - Railcar Unloader, Limestone Transfer Points (LDC-1)

#### **Supplemental Requirements for All Applications**

|                                                                   |          |
|-------------------------------------------------------------------|----------|
| 1. Process Flow Diagram :                                         | EU048-01 |
| 2. Fuel Analysis or Specification :                               | NA       |
| 3. Detailed Description of Control Equipment :                    | EU048-02 |
| 4. Description of Stack Sampling Facilities :                     | EU048-03 |
| 5. Compliance Test Report :                                       | EU048-04 |
| 6. Procedures for Startup and Shutdown :                          | NA       |
| 7. Operation and Maintenance Plan :                               | NA       |
| 8. Supplemental Information for Construction Permit Application : | EU048-05 |
| 9. Other Information Required by Rule or Statue :                 | NA       |

#### **Additional Supplemental Requirements for Category I Applications Only**

|                                                          |
|----------------------------------------------------------|
| 10. Alternative Methods of Operations :                  |
| 11. Alternative Modes of Operation (Emissions Trading) : |



12. Identification of Additional Applicable Requirements :

13. Compliance Assurance Monitoring  
Plan :

14. Acid Rain Application (Hard-copy Required) :

Acid Rain Part - Phase II (Form No. 62-210.900(1)(a))

Repowering Extension Plan (Form No. 62-210.900(1)(a)1.)

New Unit Exemption (Form No. 62-210.900(1)(a)2.)

Retired Unit Exemption (Form No. 62-210.900(1)(a)3.)

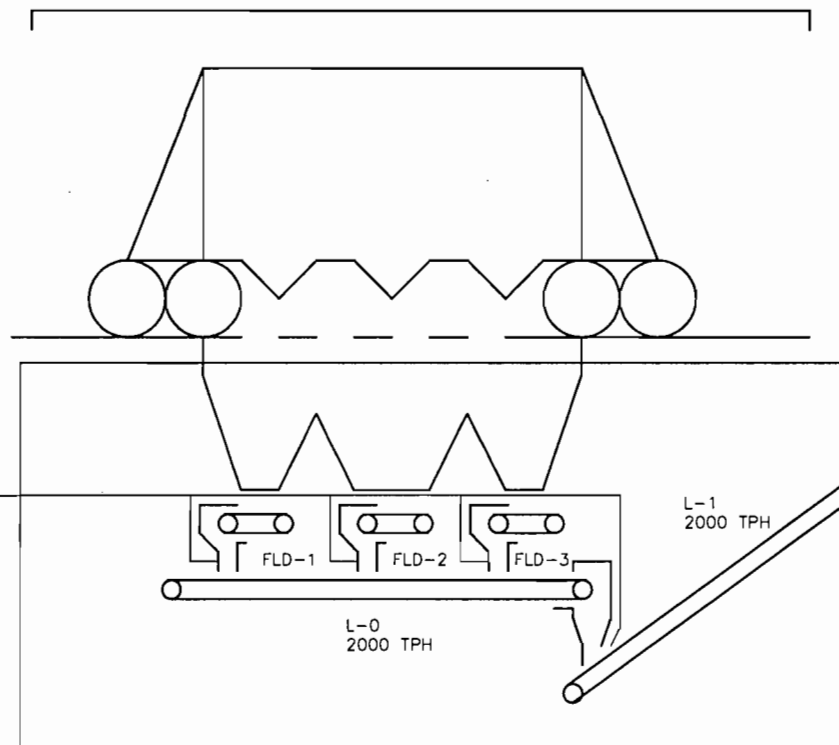
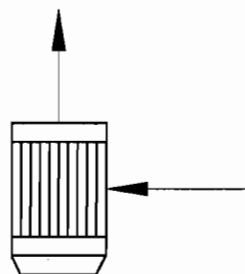
**EMISSIONS UNIT EU048**  
**Railcar Unloader, Limestone Transfer Points (LDC-1)**

**ATTACHMENT EU048-01**  
**Process Flow Diagram**

# ST JOHNS RIVER POWER PARK RAILCAR UNLOADER, LIMESTONE TRANSFER POINTS ATTACHMENT EU048-01

## EXHAUST PARAMETERS

STACK HT: 30 FT  
STACK D: 1.67 FT  
STACK T: AMBIENT  
FLOW: 7,600 ACFM  
PM10 EMISSIONS: 0.012 LB/HR & 0.002 TPY  
VISIBLE EMISSIONS: NONE - 5% OPACITY



## UNDERGROUND TRANSFER SYSTEM

**JEA**

ST JOHNS POWER PARK  
PSD PERMIT UPDATE

Simplified Process Flow Diagram

Emissions Unit ID 048

**FOSTER WHEELER ENVIRONMENTAL CORPORATION**

SCALE N/A

DATE: 02/16/99

PREPARED DJG  
CHECKED MAE  
APPROVED DJF

CAD FILE NO.  
EU048PF.DWG  
FIGURE NO.  
EU048-01

**EMISSIONS UNIT EU048**  
**Railcar Unloader, Limestone Transfer Points (LDC-1)**

**ATTACHMENT EU048-02**  
**Control Equipment Description**

**Emissions Unit EU048**

**BJRPP - Railcar Unloader, Limestone Transfer Points (LDC-1)**

**Control Equipment Description**

**Control Equipment**

**Fabric Filter/Baghouse - Existing Equipment**

**Exhaust Parameters**

**Stack Height: 30 feet; Stack Diameter: 20 inches; Stack Exhaust Temperature: Ambient; and Stack Flow 7,600 ACFM**

**Reasonable Assurances**

**Emission Limitation - No Visible Emissions (5% Opacity)**

**See Attachment EU048-04, Compliance Test Report**

**EMISSIONS UNIT EU048**  
**Railcar Unloader, Limestone Transfer Points (LDC-1)**

**ATTACHMENT EU048-03**  
**Stack Sampling Facilities Description**

## **STACK SAMPLING FACILITIES DESCRIPTION**

Pursuant to Rule 62-297.310(6), F.A.C. JEA will ensure that the required stack sampling facilities include sampling ports (Rule 62-297.310(6)(c), F.A.C.), work platforms (Rule 62-297.310(6)(d), F.A.C.), access to work platforms (Rule 62-297.310(6)(e), F.A.C.), electrical power (Rule 62-297.310(6)(f), F.A.C.), and sampling equipment support (Rule 62-297.310(6)(g), F.A.C.). All stack sampling facilities will meet any Occupational Safety and Health Administration (OSHA) Safety and Health Standards described in 29 CFR Part 1910, Subparts D and E.

In accordance with Rule 62-297.310(6)(b), F.A.C., JEA will use temporary stack sampling facilities for the existing units which are not required to conduct a compliance test on at least an annual basis may use. When electing to use temporary sampling facilities on an emissions unit, and the Department elects to test the unit, JEA will install the temporary facilities on the emissions unit within 5 days of a request by the Department. The temporary sampling facilities will remain on the emissions unit until the test is completed.

**EMISSIONS UNIT EU048**  
**Railcar Unloader, Limestone Transfer Points (LDC-1)**

**ATTACHMENT EU048-04**  
**Compliance Test Report**



**ATTACHMENT – EU048-04 - COMPLIANCE TEST REPORT**

**RAILCAR UNLOADER, LIMESTONE TRANSFER POINTS (LDC-1)**

NO TEST DATA AVAILABLE AT THIS TIME. THE OPERATION IS NOT  
CURRENTLY IN USE.

**EMISSIONS UNIT EU048**  
**Railcar Unloader, Limestone Transfer Points (LDC-1)**

**ATTACHMENT EU048-05**  
**Emissions Estimates**

**Foster Wheeler Environmental Corporation**  
**EXCEL 7.0 Worksheet Calculation**

**By:** D. Graziani, P.E.  
**Date:** 11/3/98  
**Ckd. By:** Kim Evans, P.E.  
**Date:** 11/10/98

**Cal. No.:** 901103DJG01  
**Project No.:** 7830.0020.0056

**Revision No.:** 1

**Project:** St. Johns River Power Park PSD Permit Update  
**Subject:** Emissions Estimates for Railcar Unloader, Transfer Points (LDC-1)

**Emissions Data**

| Raw Materials | Constant | Belt Speed<br>(MPH) | H2O<br>(%) | Particle Size Multipliers |      |       | Emission Factors (lb/ton) |          |          |
|---------------|----------|---------------------|------------|---------------------------|------|-------|---------------------------|----------|----------|
|               |          |                     |            | PM                        | PM10 | PM2.5 | PM                        | PM10     | PM2.5    |
| Limestone     | 0.0032   | 6.25                | 6.5        | 0.74                      | 0.35 | 0.11  | 0.000608                  | 0.000288 | 9.04E-05 |

**Operating Data**

| Raw Materials  | Operating Rates |        |
|----------------|-----------------|--------|
|                | (TPH)           | (TPY)  |
| Coal           | 0               | 0      |
| Petroleum Coke | 0               | 0      |
| Limestone      | 2000            | 600000 |

**Emission Rates - Uncontrolled**

| Raw Materials  | Short-Term |         |         |       |       |       |
|----------------|------------|---------|---------|-------|-------|-------|
|                | PM         | PM10    | PM2.5   | PM    | PM10  | PM2.5 |
|                | (lb/hr)    | (lb/hr) | (lb/hr) | (g/s) | (g/s) | (g/s) |
| Coal           | 0          | 0       | 0       | 0     | 0     | 0     |
| Petroleum Coke | 0          | 0       | 0       | 0     | 0     | 0     |
| Limestone      | 4.86       | 2.30    | 0.72    | 0.613 | 0.290 | 0.091 |

(4 Transfer Points)

**Emission Rates - Controlled 99.50%**

| Raw Materials  | Short-Term |         |         |         |         |         |
|----------------|------------|---------|---------|---------|---------|---------|
|                | PM         | PM10    | PM2.5   | PM      | PM10    | PM2.5   |
|                | (lb/hr)    | (lb/hr) | (lb/hr) | (g/s)   | (g/s)   | (g/s)   |
| Coal           | 0          | 0       | 0       | 0       | 0       | 0       |
| Petroleum Coke | 0          | 0       | 0       | 0       | 0       | 0       |
| Limestone      | 0.024      | 0.012   | 0.004   | 0.00307 | 0.00145 | 0.00046 |

**Emission Rates - Uncontrolled**

| Raw Materials  | Long-Term |       |       |        |        |        |
|----------------|-----------|-------|-------|--------|--------|--------|
|                | PM        | PM10  | PM2.5 | PM     | PM10   | PM2.5  |
|                | (TPY)     | (TPY) | (TPY) | (g/s)  | (g/s)  | (g/s)  |
| Coal           | 0         | 0     | 0     | 0      | 0      | 0      |
| Petroleum Coke | 0         | 0     | 0     | 0      | 0      | 0      |
| Limestone      | 0.73      | 0.35  | 0.11  | 0.0210 | 0.0099 | 0.0031 |

(4 Transfer Points)

**Emission Rates - Controlled 99.50%**

| Raw Materials  | Long-Term |        |        |          |          |          |
|----------------|-----------|--------|--------|----------|----------|----------|
|                | PM        | PM10   | PM2.5  | PM       | PM10     | PM2.5    |
|                | (TPY)     | (TPY)  | (TPY)  | (g/s)    | (g/s)    | (g/s)    |
| Coal           | 0         | 0      | 0      | 0        | 0        | 0        |
| Petroleum Coke | 0         | 0      | 0      | 0        | 0        | 0        |
| Limestone      | 0.0036    | 0.0017 | 0.0005 | 0.000105 | 0.000050 | 0.000016 |

**References:**

Emission Factor - AP42 Chapter 13.2.4 Aggregate Handling and Storage Piles  
 Belt Speed - JEA Operation Data  
 Moisture Contents - JEA Operational Data  
 Transfer Rates - JEA Operational Data

### III. EMISSIONS UNIT INFORMATION

#### A. TYPE OF EMISSIONS UNIT (Regulated and Unregulated Emissions Units)

Emissions Unit Information Section 6

SJRPP - Limestone Loadout Facility (LDC-2)

#### Type of Emissions Unit Addressed in This Section

1. Regulated or Unregulated Emissions Unit? Check one :

- ☒ 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.

2. Single Process, Group of Processes, or Fugitive Only? 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.

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**B. GENERAL EMISSIONS UNIT INFORMATION**  
**(Regulated and Unregulated Emissions Units)**

**Emissions Unit Description and Status**

|                                                                                                                |                                      |                                                |
|----------------------------------------------------------------------------------------------------------------|--------------------------------------|------------------------------------------------|
| 1. Description of Emissions Unit Addressed in This Section :<br><br>SJRPP - Limestone Loadout Facility (LDC-2) |                                      |                                                |
| 2. Emissions Unit Identification Number : 049<br>[ ] No Corresponding ID [ ] Unknown                           |                                      |                                                |
| 3. Emissions Unit Status<br>Code: A                                                                            | 4. Acid Rain Unit?<br>[ ] Yes [X] No | 5. Emissions Unit Major<br>Group SIC Code : 49 |
| 6. Emissions Unit Comment :<br><br>Emissions Unit consists of two transfer points.                             |                                      |                                                |

**Emissions Unit Information Section**      6

SJRPP - Limestone Loadout Facility (LDC-2)

**Emissions Unit Control Equipment**      1

1. Description :

Emissions from the transfer points are controlled by a baghouse.

2. Control Device or Method Code :      18

**C. EMISSIONS UNIT DETAIL INFORMATION**  
**(Regulated Emissions Units Only)**

**Emissions Unit Information Section**      6

SJRPP - Limestone Loadout Facility (LDC-2)

**Emissions Unit Details**

|                                       |                    |  |
|---------------------------------------|--------------------|--|
| 1. Initial Startup Date :             | 01-Dec-1986        |  |
| 2. Long-term Reserve Shutdown Date :  |                    |  |
| 3. Package Unit :                     |                    |  |
| Manufacturer :                        | Model Number :     |  |
| 4. Generator Nameplate Rating :       | MW                 |  |
| 5. Incinerator Information :          |                    |  |
| Dwell Temperature :                   | Degrees Fahrenheit |  |
| Dwell Time :                          | Seconds            |  |
| Incinerator Afterburner Temperature : | Degrees Fahrenheit |  |

**Emissions Unit Operating Capacity**

|                                         |          |               |
|-----------------------------------------|----------|---------------|
| 1. Maximum Heat Input Rate :            | mmBtu/hr |               |
| 2. Maximum Incinerator Rate :           | lb/hr    | tons/day      |
| 3. Maximum Process or Throughput Rate : | 2000     | tons per hour |
| 4. Maximum Production Rate :            |          |               |
| 5. Operating Capacity Comment :         |          |               |

**Emissions Unit Operating Schedule**

|                                        |  |                  |
|----------------------------------------|--|------------------|
| Requested Maximum Operating Schedule : |  |                  |
| 24 hours/day                           |  | 7 days/week      |
| 52 weeks/year                          |  | 8,760 hours/year |

**List of Applicable Regulations**

Rule 62-210.300(1), F.A.C., Air Construction Permits

Rule 62-210.550, F.A.C., Stack Height Policy

Rule 62-210.650, F.A.C., Circumvention

Rule 62-297.310, F.A.C., General Test Requirements

Rule 62-297.401(5) & (9), F.A.C., EPA Methods 5 and 9

Rule 62-210.700(1), (4), & (6), F.A.C., Excess Emissions

Rule 2.301, Adoption of Chapter 62-210, F.A.C., (As Noted)

Rule 2.1101, Adoption of Chapter 62-297, F.A.C., (As Noted)

Rule 62-210.300(5), F.A.C., Notification of Start-up

Rule 62-204.800(7)(e), F.A.C., Adoption of the NSPS Appendices (As Noted)

Jacksonville Environmental Protection Board, Rule 2 - Air Pollution

Rule 2.105, Maintenance of Air Pollution Control Devices

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## E. EMISSION POINT (STACK/VENT) INFORMATION

Emissions Unit Information Section 6

SJRPP - Limestone Loadout Facility (LDC-2)

Emission Point Description and Type :

|                                                                                                                            |                                           |
|----------------------------------------------------------------------------------------------------------------------------|-------------------------------------------|
| 1. Identification of Point on Plot Plan or Flow Diagram :                                                                  | LDC-2                                     |
| 2. Emission Point Type Code :                                                                                              | 2                                         |
| 3. Descriptions of Emission Points Comprising this Emissions Unit for VE Tracking :<br>(limit to 100 characters per point) |                                           |
| 4. ID Numbers or Descriptions of Emission Units with this Emission Point in Common :                                       | LDC-2                                     |
| 5. Discharge Type Code :                                                                                                   | H                                         |
| 6. Stack Height :                                                                                                          | 72 feet                                   |
| 7. Exit Diameter :                                                                                                         | 1.4 feet                                  |
| 8. Exit Temperature :                                                                                                      | 68 °F                                     |
| 9. Actual Volumetric Flow Rate :                                                                                           | 4400 acfm                                 |
| 10. Percent Water Vapor :                                                                                                  | 2.00 %                                    |
| 11. Maximum Dry Standard Flow Rate :                                                                                       | 4400 dscfm                                |
| 12. Nonstack Emission Point Height :                                                                                       | 0 feet                                    |
| 13. Emission Point UTM Coordinates :                                                                                       |                                           |
| Zone : 17                                                                                                                  | East (km) : 447.399 North (km) : 3366.481 |
| 14. Emission Point Comment :                                                                                               |                                           |

III. Part 7a - 1

## F. SEGMENT (PROCESS/FUEL) INFORMATION

Emissions Unit Information Section 6

SJRPP - Limestone Loadout Facility (LDC-2)

**Segment Description and Rate :** Segment 1

|                                                                                                    |                                     |
|----------------------------------------------------------------------------------------------------|-------------------------------------|
| 1. Segment Description (Process/Fuel Type and Associated Operating Method/Mode) :<br><br>Limestone |                                     |
| 2. Source Classification Code (SCC) : 30501099                                                     |                                     |
| 3. SCC Units : Tons Transferred Or Handled                                                         |                                     |
| 4. Maximum Hourly Rate : 2,000.00                                                                  | 5. Maximum Annual Rate : 600,000.00 |
| 6. Estimated Annual Activity Factor :                                                              |                                     |
| 7. Maximum Percent Sulfur :                                                                        | 8. Maximum Percent Ash :            |
| 9. Million Btu per SCC Unit :                                                                      |                                     |
| 10. Segment Comment :                                                                              |                                     |

III. Part 8 - 1

**G. EMISSIONS UNIT POLLUTANTS**  
**(Regulated and Unregulated Emissions Units)**

**Emissions Unit Information Section**      6  
SJRPP - Limestone Loadout Facility (LDC-2)

| 1. Pollutant Emitted | 2. Primary Control<br>Device Code | 3. Secondary Control<br>Device Code | 4. Pollutant<br>Regulatory Code |
|----------------------|-----------------------------------|-------------------------------------|---------------------------------|
| 1 - PM               | 017                               |                                     | EL                              |
| 2 - PM10             | 017                               |                                     | EL                              |

III. Part 9a - 1

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**H. EMISSIONS UNIT POLLUTANT DETAIL INFORMATION**  
**(Regulated Emissions Units Only - Emissions Limited Pollutants Only)**

**Emissions Unit Information Section**      6

SJRPP - Limestone Loadout Facility (LDC-2)

**Pollutant Potential/Estimated Emissions :**      Pollutant      1

|                                                                                                                                                                  |                   |                     |
|------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------|---------------------|
| 1. Pollutant Emitted : <b>PM</b>                                                                                                                                 |                   |                     |
| 2. Total Percent Efficiency of Control :                                                                                                                         | 99.50             | %                   |
| 3. Potential Emissions :                                                                                                                                         | 0.0120000 lb/hour | 0.0010000 tons/year |
| 4. Synthetically Limited?<br>[   ] Yes                      [X ] No                                                                                              |                   |                     |
| 5. Range of Estimated Fugitive/Other Emissions:<br><div style="text-align: right; margin-right: 100px;">to</div> <div style="text-align: right;">tons/year</div> |                   |                     |
| 6. Emissions Factor                                                                                                                                              | 0                 | Units lb/ton        |
| Reference    AP-42, (EF=0.0006)                                                                                                                                  |                   |                     |
| 7. Emissions Method Code :      3                                                                                                                                |                   |                     |
| 8. Calculations of Emissions :<br><br>See Attachment EU049-05                                                                                                    |                   |                     |
| 9. Pollutant Potential/Estimated Emissions Comment :                                                                                                             |                   |                     |

III. Part 9b - 1

**H. EMISSIONS UNIT POLLUTANT DETAIL INFORMATION**  
**(Regulated Emissions Units Only - Emissions Limited Pollutants Only)**

**Emissions Unit Information Section**      6  
SJRPP - Limestone Loadout Facility (LDC-2)

**Pollutant Potential/Estimated Emissions :**      Pollutant      2

|                                                                                                                            |                   |                     |
|----------------------------------------------------------------------------------------------------------------------------|-------------------|---------------------|
| 1. Pollutant Emitted : <b>PM10</b>                                                                                         |                   |                     |
| 2. Total Percent Efficiency of Control :                                                                                   | 99.50             | %                   |
| 3. Potential Emissions :                                                                                                   | 0.0060000 lb/hour | 0.0004000 tons/year |
| 4. Synthetically Limited?<br>[ ] Yes                      [X ] No                                                          |                   |                     |
| 5. Range of Estimated Fugitive/Other Emissions:<br><div style="text-align: right;">to                      tons/year</div> |                   |                     |
| 6. Emissions Factor                                                                                                        | 0                 | Units lb/ton        |
| Reference    AP-42, (EF=0.14)                                                                                              |                   |                     |
| 7. Emissions Method Code :      3                                                                                          |                   |                     |
| 8. Calculations of Emissions :<br><br>See Attachment EU049-05                                                              |                   |                     |
| 9. Pollutant Potential/Estimated Emissions Comment :                                                                       |                   |                     |

III. Part 9b - 2

**Emissions Unit Information Section** 6  
SJRPP - Limestone Loadout Facility (LDC-2)

**Pollutant Information Section** 1

**Allowable Emissions** 1

|                                                                                     |                                                                                                    |                 |                |
|-------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------|-----------------|----------------|
| 1. Basis for Allowable Emissions Code :                                             | OTHER                                                                                              |                 |                |
| 2. Future Effective Date of Allowable Emissions :                                   | 01-Aug-1999                                                                                        |                 |                |
| 3. Requested Allowable Emissions and Units :                                        | 5.00                                                                                               | percent opacity |                |
| 4. Equivalent Allowable Emissions :                                                 | 0.01                                                                                               | lb/hour         | 0.00 tons/year |
| 5. Method of Compliance :                                                           | Stack Test Waiver Requested Rule 62-297.310(7)(c), F.A.C.                                          |                 |                |
| 6. Pollutant Allowable Emissions Comment (Desc. of Related Operating Method/Mode) : | Updated BACT revised from 10% opacity to a requested no visible emissions limitation (5% Opacity). |                 |                |

III. Part 9c - 1

**Emissions Unit Information Section** 6  
SJRP - Limestone Loadout Facility (LDC-2)

**Pollutant Information Section** 2

**Allowable Emissions** 1

|                                                                                     |                                                                                                    |                 |                |
|-------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------|-----------------|----------------|
| 1. Basis for Allowable Emissions Code :                                             | OTHER                                                                                              |                 |                |
| 2. Future Effective Date of Allowable Emissions :                                   | 01-Aug-1999                                                                                        |                 |                |
| 3. Requested Allowable Emissions and Units :                                        | 5.00                                                                                               | percent opacity |                |
| 4. Equivalent Allowable Emissions :                                                 | 0.01                                                                                               | lb/hour         | 0.00 tons/year |
| 5. Method of Compliance :                                                           | Stack Test Waiver Requested Rule 62-297.310(7)(c), F.A.C.                                          |                 |                |
| 6. Pollutant Allowable Emissions Comment (Desc. of Related Operating Method/Mode) : | Updated BACT revised from 10% opacity to a requested no visible emissions limitation (5% Opacity). |                 |                |

III. Part 9c - 2

**I. VISIBLE EMISSIONS INFORMATION**  
**(Regulated Emissions Units Only)**

**Emissions Unit Information Section**     6  
SJRPP - Limestone Loadout Facility (LDC-2)

**Visible Emissions Limitation :** Visible Emissions Limitation     1

|                                                                                                                                                                                                                                                                          |
|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 1. Visible Emissions Subtype :                      05                                                                                                                                                                                                                   |
| 2. Basis for Allowable Opacity :                      OTHER                                                                                                                                                                                                              |
| 3. Requested Allowable Opacity :<br><div style="text-align: right; margin-top: 10px;">Normal Conditions :            5            %<br/>Exceptional Conditions :       100          %<br/>Maximum Period of Excess Opacity Allowed :                      min/hour</div> |
| 4. Method of Compliance :<br><br>EPA Method 9                                                                                                                                                                                                                            |
| 5. Visible Emissions Comment :<br><br><div style="margin-top: 20px;">Updated BACT revised from 10% opacity to a requested no visible emissions limitation (5% Opacity).<br/><br/>Excess Emissions allows 2 hours in any 24-hour period</div>                             |

III. Part 10 - 1



**J. CONTINUOUS MONITOR INFORMATION**  
**(Regulated Emissions Units Only)**

**Emissions Unit Information Section**

III. Part 11 - 1

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## K. PREVENTION OF SIGNIFICANT DETERIORATION (PSD) INCREMENT TRACKING INFORMATION

Emissions Unit Information Section 6

SJRPP - Limestone Loadout Facility (LDC-2)

### PSD Increment Consumption Determination

#### 1. Increment Consuming for Particulate Matter or Sulfur Dioxide?

- ☐ The emissions unit is undergoing PSD review as part of this application, or has undergone PSD review previously, for particulate matter or sulfur dioxide. If so, emissions unit consumes increment.
- ☐ The facility addressed in this application is classified as an EPA major source pursuant to paragraph (c) of the definition of "major source of air pollution" in Chapter 62-213, F.A.C., and the emissions unit addressed in this section commenced (or will commence) construction after January 6, 1975. If so, baseline emissions are zero, and emissions unit consumes increment.
- ☐ The facility addressed in this application is classified as an EPA major source, and the emissions unit began initial operation after January 6, 1975, but before December 27, 1977. If so, baseline emissions are zero, and emissions unit consumes increment.
- ☒ For any facility, the emissions unit began (or will begin) initial operation after December 27, 1977. If so, baseline emissions are zero, and emissions unit consumes increment.
- ☐ None of the above apply. If so, the baseline emissions of the emissions unit are nonzero. In such case, additional analysis, beyond the scope of this application, is needed to determine whether changes in emissions have occurred (or will occur) after the baseline date that may consume or expand increment.

## 2. Increment Consuming for Nitrogen Dioxide?

- ☐ The emissions unit addressed in this section is undergoing PSD review as part of this application, or has undergone PSD review previously, for nitrogen dioxide. If so, emissions unit consumes increment.
- ☐ The facility addressed in this application is classified as an EPA major source pursuant to paragraph (c) of the definition of "major source of air pollution" in Chapter 62-213, F.A.C., and the emissions unit addressed in this section commenced (or will commence) construction after February 8, 1988. If so, baseline emissions are zero, and emissions unit consumes increment.
- ☐ The facility addressed in this application is classified as an EPA major source, and the emissions unit began initial operation after February 8, 1988, but before March 28, 1988. If so, baseline emissions are zero, and emissions unit consumes increment.
- ☐ For any facility, the emissions unit began (or will begin) initial operation after March 28, 1988. If so, baseline emissions are zero, and emissions unit consumes increment.
- ☐ None of the above apply. If so, baseline emissions of the emissions unit are nonzero. In such case, additional analysis, beyond the scope of this application, is needed to determine whether changes in emissions have occurred (or will occur) after the baseline date that may consume or expand increment.

|                                         |        |         |                  |
|-----------------------------------------|--------|---------|------------------|
| 3. Increment Consuming/Expanding Code : |        |         |                  |
| PM :                                    | C      | SO2 :   | U                |
|                                         |        | NO2 :   | U                |
| 4. Baseline Emissions :                 |        |         |                  |
| PM :                                    | 0.0000 | lb/hour | 0.0000 tons/year |
| SO2 :                                   |        | lb/hour | tons/year        |
| NO2 :                                   |        |         | tons/year        |
| 5. PSD Comment :                        |        |         |                  |

## **L. EMISSIONS UNIT SUPPLEMENTAL INFORMATION**

**Emissions Unit Information Section**      6

SJRPP - Limestone Loadout Facility (LDC-2)

### **Supplemental Requirements for All Applications**

|                                                                   |          |
|-------------------------------------------------------------------|----------|
| 1. Process Flow Diagram :                                         | EU049-01 |
| 2. Fuel Analysis or Specification :                               | NA       |
| 3. Detailed Description of Control Equipment :                    | EU049-02 |
| 4. Description of Stack Sampling Facilities :                     | EU049-03 |
| 5. Compliance Test Report :                                       | EU049-04 |
| 6. Procedures for Startup and Shutdown :                          | NA       |
| 7. Operation and Maintenance Plan :                               | NA       |
| 8. Supplemental Information for Construction Permit Application : | EU049-05 |
| 9. Other Information Required by Rule or Statue :                 | NA       |

### **Additional Supplemental Requirements for Category I Applications Only**

|                                                          |
|----------------------------------------------------------|
| 10. Alternative Methods of Operations :                  |
| 11. Alternative Modes of Operation (Emissions Trading) : |

III. Part 13 - 1

12. Identification of Additional Applicable Requirements :

13. Compliance Assurance Monitoring  
Plan :

14. Acid Rain Application (Hard-copy Required) :

Acid Rain Part - Phase II (Form No. 62-210.900(1)(a))

Repowering Extension Plan (Form No. 62-210.900(1)(a)1.)

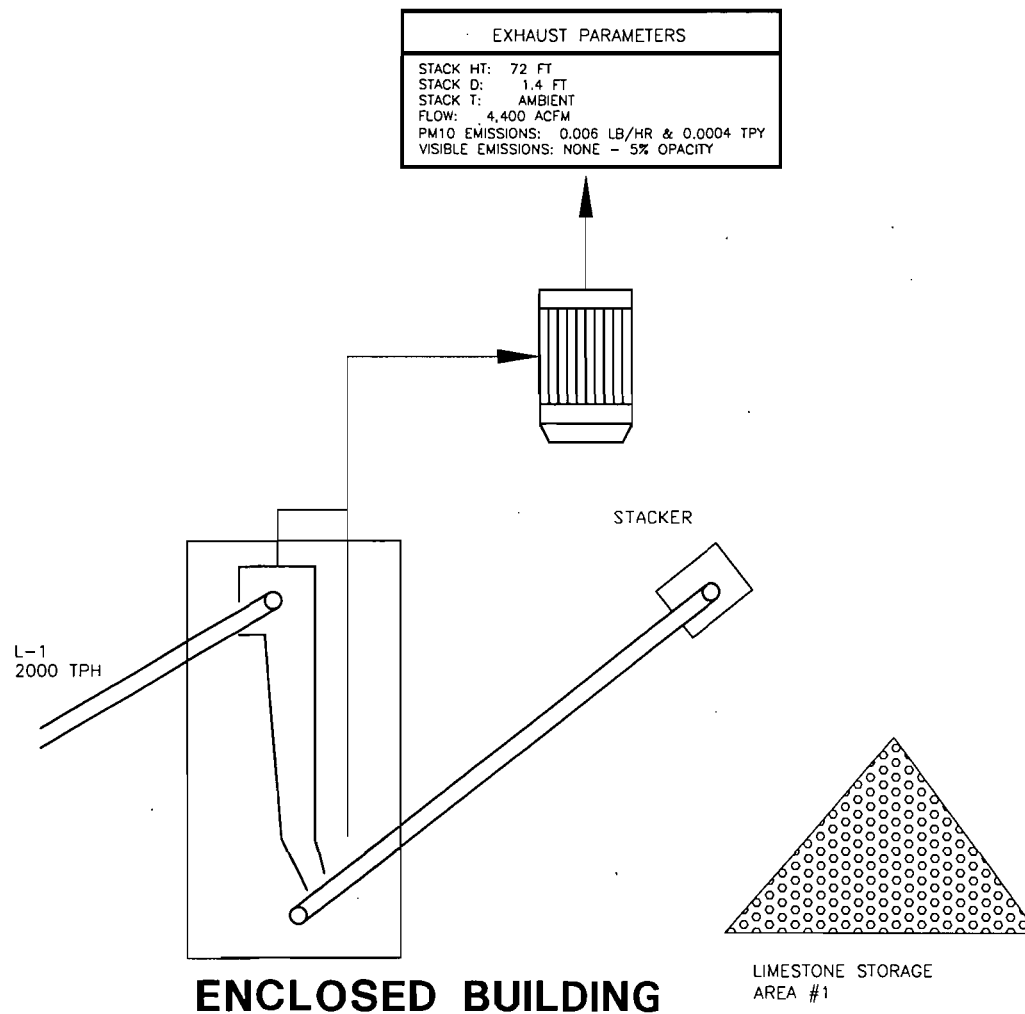
New Unit Exemption (Form No. 62-210.900(1)(a)2.)

Retired Unit Exemption (Form No. 62-210.900(1)(a)3.)

**EMISSIONS UNIT EU049**  
**Limestone Loadout Facility (LDC-2)**

**ATTACHMENT EU049-01**  
**Process Flow Diagram**

# ST JOHNS RIVER POWER PARK LIMESTONE LOADOUT FACILITY ATTACHMENT EU049-01



|                                                          |                                 |                   |                                                       |
|----------------------------------------------------------|---------------------------------|-------------------|-------------------------------------------------------|
| <b>JEA</b>                                               |                                 |                   |                                                       |
| ST JOHNS POWER PARK<br>PSD PERMIT UPDATE                 |                                 |                   |                                                       |
| Simplified Process Flow Diagram<br>Emissions Unit ID 049 |                                 |                   |                                                       |
| <b>FOSTER WHEELER ENVIRONMENTAL CORPORATION</b>          |                                 |                   |                                                       |
| SCALE N/A                                                | PREPARED<br>CHECKED<br>APPROVED | DJG<br>MAE<br>DJF | CAD FILE NO.<br>EU049PF.DWG<br>FIGURE NO.<br>EU049-01 |
| DATE: 02/16/99                                           |                                 |                   |                                                       |

**EMISSIONS UNIT EU049**  
**Limestone Loadout Facility (LDC-2)**

**ATTACHMENT EU049-02**  
**Control Equipment Description**



**Emissions Unit EU049**

**SJRPP - Limestone Loadout Facility (LDC-2)**

**Control Equipment Description**

**Control Equipment**

**Fabric Filter/Baghouse - Existing Equipment**

**Exhaust Parameters**

**Stack Height: 72 feet; Stack Diameter: 17 inches; Stack Exhaust Temperature: Ambient; and Stack Flow 4,400 ACFM**

**Reasonable Assurances**

**Emission Limitation - No Visible Emissions (5% Opacity)**

**See Attachment EU049-04, Compliance Test Report**

**EMISSIONS UNIT EU049**  
**Limestone Loadout Facility (LDC-2)**

**ATTACHMENT EU049-03**  
**Stack Sampling Facilities Description**

## **STACK SAMPLING FACILITIES DESCRIPTION**

Pursuant to Rule 62-297.310(6), F.A.C. JEA will ensure that the required stack sampling facilities include sampling ports (Rule 62-297.310(6)(c), F.A.C.), work platforms (Rule 62-297.310(6)(d), F.A.C.), access to work platforms (Rule 62-297.310(6)(e), F.A.C.), electrical power (Rule 62-297.310(6)(f), F.A.C.), and sampling equipment support (Rule 62-297.310(6)(g), F.A.C.). All stack sampling facilities will meet any Occupational Safety and Health Administration (OSHA) Safety and Health Standards described in 29 CFR Part 1910, Subparts D and E.

In accordance with Rule 62-297.310(6)(b), F.A.C., JEA will use temporary stack sampling facilities for the existing units which are not required to conduct a compliance test on at least an annual basis may use. When electing to use temporary sampling facilities on an emissions unit, and the Department elects to test the unit, JEA will install the temporary facilities on the emissions unit within 5 days of a request by the Department. The temporary sampling facilities will remain on the emissions unit until the test is completed.

**EMISSIONS UNIT EU049**  
**Limestone Loadout Facility (LDC-2)**

**ATTACHMENT EU049-04**  
**Compliance Test Report**

**ATTACHMENT – EU049-04 - COMPLIANCE TEST REPORT**

**LIMESTONE LOADOUT FACILITY (LDC-2)**

NO TEST DATA AVAILABLE AT THIS TIME. THE OPERATION IS NOT  
CURRENTLY IN USE.

**EMISSIONS UNIT EU049**  
**Limestone Loadout Facility (LDC-2)**

**ATTACHMENT EU049-05**  
**Emissions Estimates**

**Foster Wheeler Environmental Corporation**  
**EXCEL 7.0 Worksheet Calculation**

**By:** D. Graziani, P.E.

**Date:** 11/3/98

**Ckd. By:** Kim Evans, P.E.

**Date:** 11/10/98

**Cal. No.:** 901103DJG01

**Project No.:** 7830.0020.0056

**Revision No.:** 1

**Project:** St. Johns River Power Park PSD Permit Update

**Subject:** Emissions Estimates for Limestone Loadout Facility (LDC-2)

**Emissions Data**

| Raw Materials | Constant | Belt Speed<br>(MPH) | H2O<br>(%) | Particle Size Multipliers |      |       | Emission Factors (lb/ton) |         |          |
|---------------|----------|---------------------|------------|---------------------------|------|-------|---------------------------|---------|----------|
|               |          |                     |            | PM                        | PM10 | PM2.5 | PM                        | PM10    | PM2.5    |
| Limestone     | 0.0032   | 6.25                | 6.5        | 0.74                      | 0.35 | 0.11  | 0.00061                   | 0.00029 | 9.04E-05 |

**Operating Data**

| Raw Materials  | Operating Rates |        |
|----------------|-----------------|--------|
|                | (TPH)           | (TPY)  |
| Coal           | 0               | 0      |
| Petroleum Coke | 0               | 0      |
| Limestone      | 2000            | 600000 |

**Emission Rates - Uncontrolled**

| Raw Materials  | Short-Term    |                 |                  |             |               |                |
|----------------|---------------|-----------------|------------------|-------------|---------------|----------------|
|                | PM<br>(lb/hr) | PM10<br>(lb/hr) | PM2.5<br>(lb/hr) | PM<br>(g/s) | PM10<br>(g/s) | PM2.5<br>(g/s) |
| Coal           | 0             | 0               | 0                | 0           | 0             | 0              |
| Petroleum Coke | 0             | 0               | 0                | 0           | 0             | 0              |
| Limestone      | 2.43          | 1.15            | 0.36             | 0.3067      | 0.1451        | 0.0456         |

(2 Transfer Points)

**Emission Rates - Controlled 99.50%**

| Raw Materials  | Short-Term    |                 |                  |             |               |                |
|----------------|---------------|-----------------|------------------|-------------|---------------|----------------|
|                | PM<br>(lb/hr) | PM10<br>(lb/hr) | PM2.5<br>(lb/hr) | PM<br>(g/s) | PM10<br>(g/s) | PM2.5<br>(g/s) |
| Coal           | 0             | 0               | 0                | 0           | 0             | 0              |
| Petroleum Coke | 0             | 0               | 0                | 0           | 0             | 0              |
| Limestone      | 0.012         | 0.006           | 0.002            | 0.0015      | 0.0007        | 0.0002         |

**Emission Rates - Uncontrolled**

| Raw Materials  | Long-Term   |               |                |             |               |                |
|----------------|-------------|---------------|----------------|-------------|---------------|----------------|
|                | PM<br>(TPY) | PM10<br>(TPY) | PM2.5<br>(TPY) | PM<br>(g/s) | PM10<br>(g/s) | PM2.5<br>(g/s) |
| Coal           | 0           | 0             | 0              | 0           | 0             | 0              |
| Petroleum Coke | 0           | 0             | 0              | 0           | 0             | 0              |
| Limestone      | 0.18        | 0.09          | 0.03           | 0.00525     | 0.00248       | 0.00078        |

(2 Transfer Points)

**Emission Rates - Controlled 99.50%**

| Raw Materials  | Long-Term   |               |                |             |               |                |
|----------------|-------------|---------------|----------------|-------------|---------------|----------------|
|                | PM<br>(TPY) | PM10<br>(TPY) | PM2.5<br>(TPY) | PM<br>(g/s) | PM10<br>(g/s) | PM2.5<br>(g/s) |
| Coal           | 0           | 0             | 0              | 0           | 0             | 0              |
| Petroleum Coke | 0           | 0             | 0              | 0           | 0             | 0              |
| Limestone      | 0.00091     | 0.00043       | 0.00014        | 0.000026    | 0.000012      | 0.000004       |

**References:**

Emission Factor - AP42 Chapter 13.2.4 Aggregate Handling and Storage Piles

Belt Speed - JEA Operational Data

Moisture Contents - JEA Operational Data

Transfer Rates - JEA Operational Data

### III. EMISSIONS UNIT INFORMATION

#### A. TYPE OF EMISSIONS UNIT (Regulated and Unregulated Emissions Units)

Emissions Unit Information Section 7

SJRPP - Limestone Reclaim Tunnel, Transfer Points (3DC-01)

#### Type of Emissions Unit Addressed in This Section

1. Regulated or Unregulated Emissions Unit? Check one :

- ☒ [ X ] 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.

2. Single Process, Group of Processes, or Fugitive Only? 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).
- ☒ [ X ] 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.



**B. GENERAL EMISSIONS UNIT INFORMATION**  
**(Regulated and Unregulated Emissions Units)**

**Emissions Unit Description and Status**

|                                                                                                                                |                                      |                                                |
|--------------------------------------------------------------------------------------------------------------------------------|--------------------------------------|------------------------------------------------|
| 1. Description of Emissions Unit Addressed in This Section :<br><br>SJRPP - Limestone Reclaim Tunnel, Transfer Points (3DC-01) |                                      |                                                |
| 2. Emissions Unit Identification Number : 050<br>[ ] No Corresponding ID [ ] Unknown                                           |                                      |                                                |
| 3. Emissions Unit Status<br>Code : A                                                                                           | 4. Acid Rain Unit?<br>[ ] Yes [X] No | 5. Emissions Unit Major<br>Group SIC Code : 49 |
| 6. Emissions Unit Comment :<br><br>Emissions Unit consists of two transfer points.                                             |                                      |                                                |

**Emissions Unit Information Section**      7

SJRPP - Limestone Reclaim Tunnel, Transfer Points (3DC-01)

**Emissions Unit Control Equipment**      1

|                                                                  |
|------------------------------------------------------------------|
| 1. Description :                                                 |
| Emissions from the transfer points are controlled by a baghouse. |
| 2. Control Device or Method Code :      17                       |

### C. EMISSIONS UNIT DETAIL INFORMATION (Regulated Emissions Units Only)

**Emissions Unit Information Section**      7  
 SJRPP - Limestone Reclaim Tunnel, Transfer Points (3DC-01)

#### Emissions Unit Details

|                                       |             |                    |
|---------------------------------------|-------------|--------------------|
| 1. Initial Startup Date :             | 01-Dec-1986 |                    |
| 2. Long-term Reserve Shutdown Date :  |             |                    |
| 3. Package Unit :                     |             |                    |
| Manufacturer :                        |             | Model Number :     |
| 4. Generator Nameplate Rating :       | MW          |                    |
| 5. Incinerator Information :          |             |                    |
| Dwell Temperature :                   |             | Degrees Fahrenheit |
| Dwell Time :                          |             | Seconds            |
| Incinerator Afterburner Temperature : |             | Degrees Fahrenheit |

#### Emissions Unit Operating Capacity

|                                         |          |               |
|-----------------------------------------|----------|---------------|
| 1. Maximum Heat Input Rate :            | mmBtu/hr |               |
| 2. Maximum Incinerator Rate :           | lb/hr    | tons/day      |
| 3. Maximum Process or Throughput Rate : | 300      | tons per hour |
| 4. Maximum Production Rate :            |          |               |
| 5. Operating Capacity Comment :         |          |               |

#### Emissions Unit Operating Schedule

|                                        |  |                  |
|----------------------------------------|--|------------------|
| Requested Maximum Operating Schedule : |  |                  |
| 24 hours/day                           |  | 7 days/week      |
| 52 weeks/year                          |  | 8,760 hours/year |

**D. EMISSIONS UNIT REGULATIONS  
(Regulated Emissions Units Only)**

**Emissions Unit Information Section**     7  
SJRPP - Limestone Reclaim Tunnel, Transfer Points (3DC-01)

**Rule Applicability Analysis**

Unit was subject to PSD Review including the application of BACT.

**Emissions Unit Information Section** 7  
SJRP - Limestone Reclaim Tunnel, Transfer Points (3DC-01)

**List of Applicable Regulations**

Rule 62-204.800(7)(e), F.A.C., Adoption of the NSPS Appendices (As Noted)

Rule 62-210.300(5), F.A.C., Notification of Start-up

Jacksonville Environmental Protection Board, Rule 2 - Air Pollution

Rule 2.105, Maintenance of Air Pollution Control Devices

Rule 2.301, Adoption of Chapter 62-210, F.A.C., (As Noted)

Rule 2.1101, Adoption of Chapter 62-297, F.A.C., (As Noted)

Rule 62-210.300(1), F.A.C., Air Construction Permits

Rule 62-210.550, F.A.C., Stack Height Policy

Rule 62-210.650, F.A.C., Circumvention

Rule 62-297.310, F.A.C., General Test Requirements

Rule 62-297.401(5) & (9), F.A.C., EPA Methods 5 and 9

Rule 62-210.700(1), (4), & (6), F.A.C., Excess Emissions

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## E. EMISSION POINT (STACK/VENT) INFORMATION

Emissions Unit Information Section 7

SJRPP - Limestone Reclaim Tunnel, Transfer Points (3DC-01)

Emission Point Description and Type :

|                                                                                                                            |                                           |
|----------------------------------------------------------------------------------------------------------------------------|-------------------------------------------|
| 1. Identification of Point on Plot Plan or Flow Diagram :                                                                  | 3DC-01                                    |
| 2. Emission Point Type Code :                                                                                              | 2                                         |
| 3. Descriptions of Emission Points Comprising this Emissions Unit for VE Tracking :<br>(limit to 100 characters per point) |                                           |
| 4. ID Numbers or Descriptions of Emission Units with this Emission Point in Common :                                       | 3DC-01                                    |
| 5. Discharge Type Code :                                                                                                   | D                                         |
| 6. Stack Height :                                                                                                          | 39 feet                                   |
| 7. Exit Diameter :                                                                                                         | 1.0 feet                                  |
| 8. Exit Temperature :                                                                                                      | 68 °F                                     |
| 9. Actual Volumetric Flow Rate :                                                                                           | 2700 acfm                                 |
| 10. Percent Water Vapor :                                                                                                  | 2.00 %                                    |
| 11. Maximum Dry Standard Flow Rate :                                                                                       | 2700 dscfm                                |
| 12. Nonstack Emission Point Height :                                                                                       | 0 feet                                    |
| 13. Emission Point UTM Coordinates :                                                                                       |                                           |
| Zone : 17                                                                                                                  | East (km) : 447.265 North (km) : 3366.538 |
| 14. Emission Point Comment :                                                                                               |                                           |

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## F. SEGMENT (PROCESS/FUEL) INFORMATION

Emissions Unit Information Section 7

SJRPP - Limestone Reclaim Tunnel, Transfer Points (3DC-01)

Segment Description and Rate : Segment 1

|                                                                                                    |                                     |
|----------------------------------------------------------------------------------------------------|-------------------------------------|
| 1. Segment Description (Process/Fuel Type and Associated Operating Method/Mode) :<br><br>Limestone |                                     |
| 2. Source Classification Code (SCC) : 30501099                                                     |                                     |
| 3. SCC Units : Tons Transferred Or Handled                                                         |                                     |
| 4. Maximum Hourly Rate : 300.00                                                                    | 5. Maximum Annual Rate : 600,000.00 |
| 6. Estimated Annual Activity Factor :                                                              |                                     |
| 7. Maximum Percent Sulfur :                                                                        | 8. Maximum Percent Ash :            |
| 9. Million Btu per SCC Unit :                                                                      |                                     |
| 10. Segment Comment :                                                                              |                                     |

III. Part 8 - 1



**G. EMISSIONS UNIT POLLUTANTS**  
**(Regulated and Unregulated Emissions Units)**

**Emissions Unit Information Section**     7  
SJRPP - Limestone Reclaim Tunnel, Transfer Points (3DC-01)

| 1. Pollutant Emitted | 2. Primary Control Device Code | 3. Secondary Control Device Code | 4. Pollutant Regulatory Code |
|----------------------|--------------------------------|----------------------------------|------------------------------|
| 1 - PM               | 017                            |                                  | EL                           |
| 2 - PM10             | 017                            |                                  | EL                           |

III. Part 9a - 1

DEP Form No. 62-210.900(1) - Form  
Effective : 3-21-96

**H. EMISSIONS UNIT POLLUTANT DETAIL INFORMATION**  
**(Regulated Emissions Units Only - Emissions Limited Pollutants Only)**

**Emissions Unit Information Section**      7  
SJRPP - Limestone Reclaim Tunnel, Transfer Points (3DC-01)

**Pollutant Potential/Estimated Emissions :**      Pollutant      1

|                                                                                                                                                                  |                   |                     |
|------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------|---------------------|
| 1. Pollutant Emitted : <b>PM</b>                                                                                                                                 |                   |                     |
| 2. Total Percent Efficiency of Control :                                                                                                                         | 99.50             | %                   |
| 3. Potential Emissions :                                                                                                                                         | 0.0006600 lb/hour | 0.0006600 tons/year |
| 4. Synthetically Limited?<br><input type="checkbox"/> Yes <input checked="" type="checkbox"/> No                                                                 |                   |                     |
| 5. Range of Estimated Fugitive/Other Emissions:<br><div style="text-align: right; margin-right: 100px;">to</div> <div style="text-align: right;">tons/year</div> |                   |                     |
| 6. Emissions Factor                                                                                                                                              | 0                 | Units lb/ton        |
| Reference    AP-42, (EF=0.00022)                                                                                                                                 |                   |                     |
| 7. Emissions Method Code :      3                                                                                                                                |                   |                     |
| 8. Calculations of Emissions :<br><br>See Attachment EU050-05                                                                                                    |                   |                     |
| 9. Pollutant Potential/Estimated Emissions Comment :                                                                                                             |                   |                     |

**H. EMISSIONS UNIT POLLUTANT DETAIL INFORMATION**  
**(Regulated Emissions Units Only - Emissions Limited Pollutants Only)**

**Emissions Unit Information Section**      7

SJRPP - Limestone Reclaim Tunnel, Transfer Points (3DC-01)

**Pollutant Potential/Estimated Emissions :**      Pollutant      2

|                                                                                                                                                                  |                   |                     |
|------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------|---------------------|
| 1. Pollutant Emitted : <b>PM10</b>                                                                                                                               |                   |                     |
| 2. Total Percent Efficiency of Control :                                                                                                                         | 99.50             | %                   |
| 3. Potential Emissions :                                                                                                                                         | 0.0003100 lb/hour | 0.0003100 tons/year |
| 4. Synthetically Limited?<br><input type="checkbox"/> Yes <input checked="" type="checkbox"/> No                                                                 |                   |                     |
| 5. Range of Estimated Fugitive/Other Emissions:<br><div style="text-align: right; margin-right: 100px;">to</div> <div style="text-align: right;">tons/year</div> |                   |                     |
| 6. Emissions Factor                                                                                                                                              | 0                 | Units lb/ton        |
| Reference    AP-42, (EF=0.0001)                                                                                                                                  |                   |                     |
| 7. Emissions Method Code :      3                                                                                                                                |                   |                     |
| 8. Calculations of Emissions :<br><br>See Attachment EU050-05                                                                                                    |                   |                     |
| 9. Pollutant Potential/Estimated Emissions Comment :                                                                                                             |                   |                     |

**Emissions Unit Information Section** 7  
SJRPP - Limestone Reclaim Tunnel, Transfer Points (3DC-01)

**Pollutant Information Section** 1

**Allowable Emissions** 1

|                                                                                     |                                                                                                    |                 |                |
|-------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------|-----------------|----------------|
| 1. Basis for Allowable Emissions Code :                                             | OTHER                                                                                              |                 |                |
| 2. Future Effective Date of Allowable Emissions :                                   | 01-Aug-1999                                                                                        |                 |                |
| 3. Requested Allowable Emissions and Units :                                        | 5.00                                                                                               | Percent Opacity |                |
| 4. Equivalent Allowable Emissions :                                                 | 0.03                                                                                               | lb/hour         | 0.12 tons/year |
| 5. Method of Compliance :                                                           | Stack Test Waiver Requested Rule 62-297.310(7)(c), F.A.C.                                          |                 |                |
| 6. Pollutant Allowable Emissions Comment (Desc. of Related Operating Method/Mode) : | Updated BACT revised from 10% opacity to a requested no visible emissions limitation (5% Opacity). |                 |                |

III. Part 9c - 1

**Emissions Unit Information Section**      7  
SJRPP - Limestone Reclaim Tunnel, Transfer Points (3DC-01)

**Pollutant Information Section**      2

**Allowable Emissions**      1

|                                                                                                                                                                                           |  |             |                 |
|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--|-------------|-----------------|
| 1. Basis for Allowable Emissions Code :                                                                                                                                                   |  | OTHER       |                 |
| 2. Future Effective Date of Allowable Emissions :                                                                                                                                         |  | 01-Aug-1999 |                 |
| 3. Requested Allowable Emissions and Units :                                                                                                                                              |  | 5.00        | percent opacity |
| 4. Equivalent Allowable Emissions :                                                                                                                                                       |  | 0.00        | lb/hour         |
|                                                                                                                                                                                           |  | 0.00        | tons/year       |
| 5. Method of Compliance :<br>Stack Test Waiver Requested Rule 62-297.310(7)(c), F.A.C.                                                                                                    |  |             |                 |
| 6. Pollutant Allowable Emissions Comment (Desc. of Related Operating Method/Mode) :<br>Updated BACT revised from 10% opacity to a requested no visible emissions limitation (5% Opacity). |  |             |                 |

III. Part 9c - 2

**I. VISIBLE EMISSIONS INFORMATION**  
**(Regulated Emissions Units Only)**

**Emissions Unit Information Section**     7

SJRPP - Limestone Reclaim Tunnel, Transfer Points (3DC-01)

**Visible Emissions Limitation :** Visible Emissions Limitation     1

|                                                                                                                                                                                                                                                                                |
|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 1. Visible Emissions Subtype :                      05                                                                                                                                                                                                                         |
| 2. Basis for Allowable Opacity :                      RULE                                                                                                                                                                                                                     |
| 3. Requested Allowable Opacity :<br><div style="text-align: right; margin-top: 10px;">Normal Conditions :              5              %<br/>Exceptional Conditions :        100           %<br/>Maximum Period of Excess Opacity Allowed :                      min/hour</div> |
| 4. Method of Compliance :<br><br>EPA Method 9                                                                                                                                                                                                                                  |
| 5. Visible Emissions Comment :<br><br>Updated BACT revised from 10% opacity to a requested no visible emissions limitation (5% Opacity).<br>Excess Emissions - 2 hours in any 24-hour period                                                                                   |

III. Part 10 - 1

**J. CONTINUOUS MONITOR INFORMATION**  
**(Regulated Emissions Units Only)**

**Emissions Unit Information Section**

III. Part 11 - 1

DEP Form No. 62-210.900(1) - Form  
Effective : 3-21-96

## K. PREVENTION OF SIGNIFICANT DETERIORATION (PSD) INCREMENT TRACKING INFORMATION

Emissions Unit Information Section 7

SJRPP - Limestone Reclaim Tunnel, Transfer Points (3DC-01)

### PSD Increment Consumption Determination

#### 1. Increment Consuming for Particulate Matter or Sulfur Dioxide?

- ☐ The emissions unit is undergoing PSD review as part of this application, or has undergone PSD review previously, for particulate matter or sulfur dioxide. If so, emissions unit consumes increment.
- ☐ The facility addressed in this application is classified as an EPA major source pursuant to paragraph (c) of the definition of "major source of air pollution" in Chapter 62-213, F.A.C., and the emissions unit addressed in this section commenced (or will commence) construction after January 6, 1975. If so, baseline emissions are zero, and emissions unit consumes increment.
- ☐ The facility addressed in this application is classified as an EPA major source, and the emissions unit began initial operation after January 6, 1975, but before December 27, 1977. If so, baseline emissions are zero, and emissions unit consumes increment.
- ☒ For any facility, the emissions unit began (or will begin) initial operation after December 27, 1977. If so, baseline emissions are zero, and emissions unit consumes increment.
- ☐ None of the above apply. If so, the baseline emissions of the emissions unit are nonzero. In such case, additional analysis, beyond the scope of this application, is needed to determine whether changes in emissions have occurred (or will occur) after the baseline date that may consume or expand increment.



## 2. Increment Consuming for Nitrogen Dioxide?

- ☐ The emissions unit addressed in this section is undergoing PSD review as part of this application, or has undergone PSD review previously, for nitrogen dioxide. If so, emissions unit consumes increment.
- ☐ The facility addressed in this application is classified as an EPA major source pursuant to paragraph (c) of the definition of "major source of air pollution" in Chapter 62-213, F.A.C., and the emissions unit addressed in this section commenced (or will commence) construction after February 8, 1988. If so, baseline emissions are zero, and emissions unit consumes increment.
- ☐ The facility addressed in this application is classified as an EPA major source, and the emissions unit began initial operation after February 8, 1988, but before March 28, 1988. If so, baseline emissions are zero, and emissions unit consumes increment.
- ☐ For any facility, the emissions unit began (or will begin) initial operation after March 28, 1988. If so, baseline emissions are zero, and emissions unit consumes increment.
- ☐ None of the above apply. If so, baseline emissions of the emissions unit are nonzero. In such case, additional analysis, beyond the scope of this application, is needed to determine whether changes in emissions have occurred (or will occur) after the baseline date that may consume or expand increment.

### 3. Increment Consuming/Expanding Code :

PM : C

SO2 : U

NO2 : U

### 4. Baseline Emissions :

|       |                |                  |
|-------|----------------|------------------|
| PM :  | 0.0000 lb/hour | 0.0000 tons/year |
| SO2 : | lb/hour        | tons/year        |
| NO2 : |                | tons/year        |

### 5. PSD Comment :

## III. Part 12 - 2

## L. EMISSIONS UNIT SUPPLEMENTAL INFORMATION

### Emissions Unit Information Section 7

SJRPP - Limestone Reclaim Tunnel, Transfer Points (3DC-01)

#### Supplemental Requirements for All Applications

|                                                                   |          |
|-------------------------------------------------------------------|----------|
| 1. Process Flow Diagram :                                         | EU050-01 |
| 2. Fuel Analysis or Specification :                               | NA       |
| 3. Detailed Description of Control Equipment :                    | EU050-02 |
| 4. Description of Stack Sampling Facilities :                     | EU050-03 |
| 5. Compliance Test Report :                                       | EU050-04 |
| 6. Procedures for Startup and Shutdown :                          | NA       |
| 7. Operation and Maintenance Plan :                               | NA       |
| 8. Supplemental Information for Construction Permit Application : | EU050-05 |
| 9. Other Information Required by Rule or Statute :                | NA       |

#### Additional Supplemental Requirements for Category I Applications Only

|                                                          |
|----------------------------------------------------------|
| 10. Alternative Methods of Operations :                  |
| 11. Alternative Modes of Operation (Emissions Trading) : |

III. Part 13 - 1

12. Identification of Additional Applicable Requirements :

13. Compliance Assurance Monitoring  
Plan :

14. Acid Rain Application (Hard-copy Required) :

Acid Rain Part - Phase II (Form No. 62-210.900(1)(a))

Repowering Extension Plan (Form No. 62-210.900(1)(a)1.)

New Unit Exemption (Form No. 62-210.900(1)(a)2.)

Retired Unit Exemption (Form No. 62-210.900(1)(a)3.)

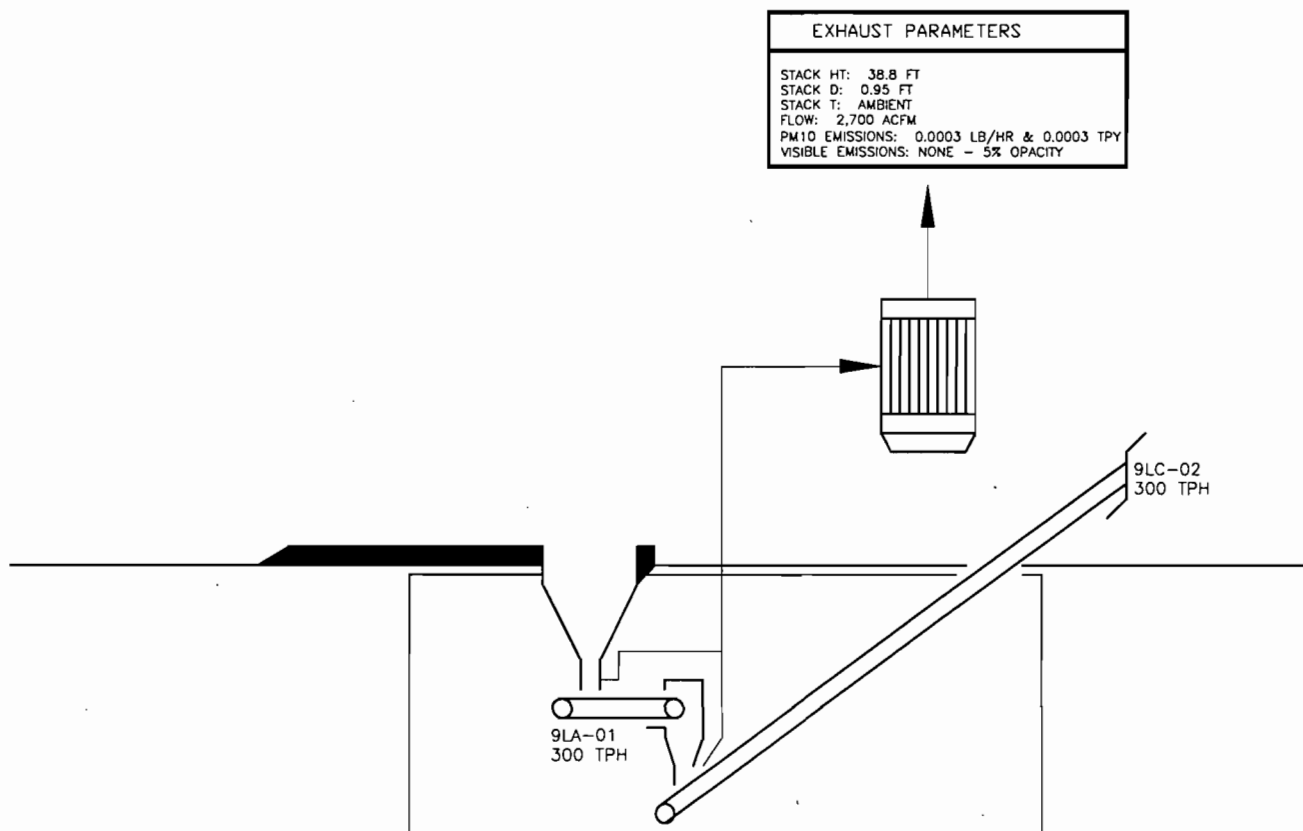
**EMISSIONS UNIT EU050**  
**Limestone Reclaim Tunnel (3DC-01)**

**ATTACHMENT EU050-01**  
**Process Flow Diagram**

# ST JOHNS RIVER POWER PARK

## LIMESTONE RECLAIM TUNNEL, TRANSFER POINTS

### ATTACHMENT EU050-01



**UNDERGROUND TRANSFER SYSTEM**

|                                                                                                                    |              |                          |
|--------------------------------------------------------------------------------------------------------------------|--------------|--------------------------|
| <b>JEA</b><br>ST JOHNS POWER PARK<br>PSD PERMIT UPDATE<br>Simplified Process Flow Diagram<br>Emissions Unit ID 050 |              |                          |
| FOSTER WHEELER ENVIRONMENTAL CORPORATION                                                                           |              |                          |
| SCALE N/A                                                                                                          | PREPARED DJG | CAD FILE NO. EU050PF.DWG |
| DATE: 02/16/99                                                                                                     | CHECKED MAE  | FIGURE NO. EU050-01      |
|                                                                                                                    | APPROVED DJF |                          |

**EMISSIONS UNIT EU050**  
**Limestone Reclaim Tunnel (3DC-01)**

**ATTACHMENT EU050-02**  
**Control Equipment Description**

**Emissions Unit EU050**

**SJRPP - Limestone Reclaim Tunnel (3DC-01)**

**Control Equipment Description**

**Control Equipment**

**Fabric Filter/Baghouse - Existing Equipment**

**Exhaust Parameters**

**Stack Height: 39 feet; Stack Diameter: 11.5 inches; Stack Exhaust Temperature: Ambient; and Stack Flow 2,700 ACFM**

**Reasonable Assurances**

**Emission Limitation - No Visible Emissions (5% Opacity)**

**See Attachment EU050-04, Compliance Test Report**

**EMISSIONS UNIT EU050**  
**Limestone Reclaim Tunnel (3DC-01)**

**ATTACHMENT EU050-03**  
**Stack Sampling Facilities Description**



## **STACK SAMPLING FACILITIES DESCRIPTION**

Pursuant to Rule 62-297.310(6), F.A.C. JEA will ensure that the required stack sampling facilities include sampling ports (Rule 62-297.310(6)(c), F.A.C.), work platforms (Rule 62-297.310(6)(d), F.A.C.), access to work platforms (Rule 62-297.310(6)(e), F.A.C.), electrical power (Rule 62-297.310(6)(f), F.A.C.), and sampling equipment support (Rule 62-297.310(6)(g), F.A.C.). All stack sampling facilities will meet any Occupational Safety and Health Administration (OSHA) Safety and Health Standards described in 29 CFR Part 1910, Subparts D and E.

In accordance with Rule 62-297.310(6)(b), F.A.C., JEA will use temporary stack sampling facilities for the existing units which are not required to conduct a compliance test on at least an annual basis may use. When electing to use temporary sampling facilities on an emissions unit, and the Department elects to test the unit, JEA will install the temporary facilities on the emissions unit within 5 days of a request by the Department. The temporary sampling facilities will remain on the emissions unit until the test is completed.

**EMISSIONS UNIT EU050**  
**Limestone Reclaim Tunnel (3DC-01)**

**ATTACHMENT EU050-04**  
**Compliance Test Report**

EPA

## VISIBLE EMISSION OBSERVATION FORM 1

 Method Used (Circle One) Method 2 203A 203B Other: \_\_\_\_\_

 Company Name  
ST. JOHN'S RIVER POWER PARK  
 Facility Name  
ST. JOHN'S RIVER POWER PARK  
 Street Address  
11201 NEW BELL ROAD  
 City JACKSONVILLE State FL Zip 32226

 Process LIMESTONE RECLAIM Unit # COM Operating Mode  
 Control Equipment BAGHOUSE 3DC-D1 Operating Mode 100% CAPACITY

 Describe Emission Point:  
BAGHOUSE EFFLUENT EXHAUST 3DC-D1

 Height of Emiss. Pt.  
 Start 20' End 20' Height of Emiss. Pt. Rel to Observer  
 Start 14' End 14'  
 Distance to Emiss. Pt.  
 Start 35' End 35' Direction to Emiss. Pt. (Degrees)  
 Start 280° End 280°

 Vertical Angle to Obs. Pt.  
 Start 17° End 17° Direction to Obs. Pt. (Degrees)  
 Start 294° End 294°  
 Distance and Direction to Observation Point from Emission Point  
 Start 1'-196° End 1'-196°

 Describe Emissions  
 Start NONE End NONE  
 Emission Color NONE Water Droplet Plume NONE  
 Start NONE End NONE Attached None Detached None

 Describe Plume Background  
 Start BAGHOUSE HOUSING End BAGHOUSE HOUSING  
 Background Color RUST Sky Conditions OVERCAST  
 Start 20-25 End 20-25 Wind Direction 320°  
 Ambient Temp. 54° Wet Bulb Temp. 55° RH Percent 100%

Source Layout Sketch

Draw North Arrow  
☒ IN ☐ MN

Observer's Position

Sun Location

Wind

Stack With Plume

Latitude

Longitude

Declination

Additional Information

 Form Number 00501 Page 1 of 2  
 Continued on VEO Form Number 00502

| Observation Date |   | Time Zone |    |    | Start Time | End Time |
|------------------|---|-----------|----|----|------------|----------|
| 4/30/99          |   | EST       |    |    | 0750       | 0850     |
| Sec<br>Min       | 0 | 15        | 30 | 45 | Comments   |          |
| 1                | 0 | 0         | 0  | 0  |            |          |
| 2                | 0 | 0         | 0  | 0  |            |          |
| 3                | 0 | 0         | 0  | 0  |            |          |
| 4                | 0 | 0         | 0  | 0  |            |          |
| 5                | 0 | 0         | 0  | 0  |            |          |
| 6                | 0 | 0         | 0  | 0  |            |          |
| 7                | 0 | 0         | 0  | 0  |            |          |
| 8                | 0 | 0         | 0  | 0  |            |          |
| 9                | 0 | 0         | 0  | 0  |            |          |
| 10               | 0 | 0         | 0  | 0  |            |          |
| 11               | 0 | 0         | 0  | 0  |            |          |
| 12               | 0 | 0         | 0  | 0  |            |          |
| 13               | 0 | 0         | 0  | 0  |            |          |
| 14               | 0 | 0         | 0  | 0  |            |          |
| 15               | 0 | 0         | 0  | 0  |            |          |
| 16               | 0 | 0         | 0  | 0  |            |          |
| 17               | 0 | 0         | 0  | 0  |            |          |
| 18               | 0 | 0         | 0  | 0  |            |          |
| 19               | 0 | 0         | 0  | 0  |            |          |
| 20               | 0 | 0         | 0  | 0  |            |          |
| 21               | 0 | 0         | 0  | 0  |            |          |
| 22               | 0 | 0         | 0  | 0  |            |          |
| 23               | 0 | 0         | 0  | 0  |            |          |
| 24               | 0 | 0         | 0  | 0  |            |          |
| 25               | 0 | 0         | 0  | 0  |            |          |
| 26               | 0 | 0         | 0  | 0  |            |          |
| 27               | 0 | 0         | 0  | 0  |            |          |
| 28               | 0 | 0         | 0  | 0  |            |          |
| 29               | 0 | 0         | 0  | 0  |            |          |
| 30               | 0 | 0         | 0  | 0  |            |          |

 Observer's Name (Print)  
MARK K. LOEBELT  
 Observer's Signature  
Mark K. Loebelt  
 Organization  
ST. JOHN'S RIVER POWER PARK  
 Eastern Technical Associates  
 Date  
4/30/99  
12/3/98

EPA

## VISIBLE EMISSION OBSERVATION FORM 1

|                          |      |      |              |
|--------------------------|------|------|--------------|
| Method Used (Circle One) | 203A | 203B | Other: _____ |
| (Method 9)               |      |      |              |

|                                                    |                    |                     |
|----------------------------------------------------|--------------------|---------------------|
| Company Name<br><b>ST. JOHNS RIVER POWER PARK</b>  |                    |                     |
| Facility Name<br><b>ST. JOHNS RIVER POWER PARK</b> |                    |                     |
| Street Address<br><b>11201 NEW BERLIN ROAD</b>     |                    |                     |
| City<br><b>JACKSONVILLE</b>                        | State<br><b>FL</b> | Zip<br><b>32226</b> |

|                                             |                      |                                        |
|---------------------------------------------|----------------------|----------------------------------------|
| Process<br><b>LIMESTONE RECLAIM</b>         | Unit #<br><b>COM</b> | Operating Mode                         |
| Control Equipment<br><b>BAGHOUSE 3DC-D1</b> |                      | Operating Mode<br><b>100% CAPACITY</b> |

|                                                                    |  |
|--------------------------------------------------------------------|--|
| Describe Emission Point<br><b>BAGHOUSE EFFLUENT EXHAUST 3DC-D1</b> |  |
|--------------------------------------------------------------------|--|

|                                                 |                                                                |
|-------------------------------------------------|----------------------------------------------------------------|
| Height of Emiss. Pt.<br>Start _____ End _____   | Height of Emiss. Pt. Rel. to Observer<br>Start _____ End _____ |
| Distance to Emiss. Pt.<br>Start _____ End _____ | Direction to Emiss. Pt. (Degrees)<br>Start _____ End _____     |

|                                                                                          |                                                          |
|------------------------------------------------------------------------------------------|----------------------------------------------------------|
| Vertical Angle to Obs. Pt.<br>Start _____ End _____                                      | Direction to Obs. Pt. (Degrees)<br>Start _____ End _____ |
| Distance and Direction to Observation Point from Emission Point<br>Start _____ End _____ |                                                          |

|                       |                                                                                                   |
|-----------------------|---------------------------------------------------------------------------------------------------|
| Describe Emissions    |                                                                                                   |
| Start _____           | End _____                                                                                         |
| Emission Color        | Water Droplet Plume                                                                               |
| Start _____ End _____ | Attached <input type="checkbox"/> Detached <input type="checkbox"/> None <input type="checkbox"/> |

|                           |                       |
|---------------------------|-----------------------|
| Describe Plume Background |                       |
| Start _____               | End _____             |
| Background Color          | Sky Conditions        |
| Start _____ End _____     | Start _____ End _____ |
| Wind Speed                | Wind Direction        |
| Start _____ End _____     | Start _____ End _____ |
| Ambient Temp.             | Wet Bulb Temp.        |
| Start _____ End _____     | RH Percent            |

|                      |          |                                                                             |
|----------------------|----------|-----------------------------------------------------------------------------|
| Source Layout Sketch |          | Draw North Arrow<br><input type="checkbox"/> TN <input type="checkbox"/> MN |
|                      |          |                                                                             |
| Longitude            | Latitude | Declination                                                                 |

|                        |  |
|------------------------|--|
| Additional Information |  |
|                        |  |

|                              |       |      |       |    |   |
|------------------------------|-------|------|-------|----|---|
| Form Number                  | 00502 | Page | 2     | of | 2 |
| Continued on VEO Form Number |       |      | 00501 |    |   |

|                                    |                         |                           |                         |    |          |
|------------------------------------|-------------------------|---------------------------|-------------------------|----|----------|
| Observation Date<br><b>4/30/99</b> | Time Zone<br><b>EOT</b> | Start Time<br><b>0750</b> | End Time<br><b>0850</b> |    |          |
| Sec<br>Min                         | 0                       | 15                        | 30                      | 45 | Comments |
| 1                                  | 0                       | 0                         | 0                       | 0  |          |
| 2                                  | 0                       | 0                         | 0                       | 0  |          |
| 3                                  | 0                       | 0                         | 0                       | 0  |          |
| 4                                  | 0                       | 0                         | 0                       | 0  |          |
| 5                                  | 0                       | 0                         | 0                       | 0  |          |
| 6                                  | 0                       | 0                         | 0                       | 0  |          |
| 7                                  | 0                       | 0                         | 0                       | 0  |          |
| 8                                  | 0                       | 0                         | 0                       | 0  |          |
| 9                                  | 0                       | 0                         | 0                       | 0  |          |
| 10                                 | 0                       | 0                         | 0                       | 0  |          |
| 11                                 | 0                       | 0                         | 0                       | 0  |          |
| 12                                 | 0                       | 0                         | 0                       | 0  |          |
| 13                                 | 0                       | 0                         | 0                       | 0  |          |
| 14                                 | 0                       | 0                         | 0                       | 0  |          |
| 15                                 | 0                       | 0                         | 0                       | 0  |          |
| 16                                 | 0                       | 0                         | 0                       | 0  |          |
| 17                                 | 0                       | 0                         | 0                       | 0  |          |
| 18                                 | 0                       | 0                         | 0                       | 0  |          |
| 19                                 | 0                       | 0                         | 0                       | 0  |          |
| 20                                 | 0                       | 0                         | 0                       | 0  |          |
| 21                                 | 0                       | 0                         | 0                       | 0  |          |
| 22                                 | 0                       | 0                         | 0                       | 0  |          |
| 23                                 | 0                       | 0                         | 0                       | 0  |          |
| 24                                 | 0                       | 0                         | 0                       | 0  |          |
| 25                                 | 0                       | 0                         | 0                       | 0  |          |
| 26                                 | 0                       | 0                         | 0                       | 0  |          |
| 27                                 | 0                       | 0                         | 0                       | 0  |          |
| 28                                 | 0                       | 0                         | 0                       | 0  |          |
| 29                                 | 0                       | 0                         | 0                       | 0  |          |
| 30                                 | 0                       | 0                         | 0                       | 0  |          |

|                                                     |                        |
|-----------------------------------------------------|------------------------|
| Observer's Name (Print)<br><b>MARK K. LOEWELT</b>   | Date<br><b>4/30/99</b> |
| Observer's Signature<br><b>Mark K. Loewelt</b>      |                        |
| Organization<br><b>ST. JOHNS RIVER POWER PARK</b>   |                        |
| Certified By<br><b>EASTERN TECHNICAL ASSOCIATES</b> | Date<br><b>12/3/98</b> |

**EMISSIONS UNIT EU050**  
**Limestone Reclaim Tunnel (3DC-01)**

**ATTACHMENT EU050-05**  
**Emissions Estimates**

**Foster Wheeler Environmental Corporation**  
**EXCEL 7.0 Worksheet Calculation**

By: D. Graziani, P.E.  
 Date: 11/3/98  
 Ckd. By: Kim Evans, P.E.  
 Date: 11/10/98

Cal. No.: 901103DJG01  
 Project No.: 7830.0020.0056

Revision No.: 1

**Project:** St. Johns River Power Park PSD Permit Update  
**Subject:** Emissions Estimates for Limestone Reclaim Tunnel (3DC-01)

**Emissions Data**

| Raw Materials | Constant | Belt Speed<br>(MPH) | H2O<br>(%) | Particle Size Multipliers |      |       | Emission Factors (lb/ton) |         |          |
|---------------|----------|---------------------|------------|---------------------------|------|-------|---------------------------|---------|----------|
|               |          |                     |            | PM                        | PM10 | PM2.5 | PM                        | PM10    | PM2.5    |
| Limestone     | 0.0032   | 2.87                | 6.5        | 0.74                      | 0.35 | 0.11  | 0.00022                   | 0.00010 | 3.29E-05 |

**Operating Data**

| Raw Materials  | Operating Rates |        |
|----------------|-----------------|--------|
|                | (TPH)           | (TPY)  |
| Coal           | 0               | 0      |
| Petroleum Coke | 0               | 0      |
| Limestone      | 300             | 600000 |

**Emission Rates - Uncontrolled**

| Raw Materials  | Short-Term |         |         |        |        |        |
|----------------|------------|---------|---------|--------|--------|--------|
|                | PM         | PM10    | PM2.5   | PM     | PM10   | PM2.5  |
|                | (lb/hr)    | (lb/hr) | (lb/hr) | (g/s)  | (g/s)  | (g/s)  |
| Coal           | 0          | 0       | 0       | 0      | 0      | 0      |
| Petroleum Coke | 0          | 0       | 0       | 0      | 0      | 0      |
| Limestone      | 0.13       | 0.06    | 0.02    | 0.0167 | 0.0079 | 0.0025 |

(2 Transfer Points)

**Emission Rates - Controlled 99.50%**

| Raw Materials  | Short-Term |          |          |          |          |          |
|----------------|------------|----------|----------|----------|----------|----------|
|                | PM         | PM10     | PM2.5    | PM       | PM10     | PM2.5    |
|                | (lb/hr)    | (lb/hr)  | (lb/hr)  | (g/s)    | (g/s)    | (g/s)    |
| Coal           | 0          | 0        | 0        | 0        | 0        | 0        |
| Petroleum Coke | 0          | 0        | 0        | 0        | 0        | 0        |
| Limestone      | 0.000663   | 0.000314 | 0.000099 | 0.000084 | 0.000040 | 0.000012 |

**Emission Rates - Uncontrolled**

| Raw Materials  | Long-Term |       |       |         |         |         |
|----------------|-----------|-------|-------|---------|---------|---------|
|                | PM        | PM10  | PM2.5 | PM      | PM10    | PM2.5   |
|                | (TPY)     | (TPY) | (TPY) | (g/s)   | (g/s)   | (g/s)   |
| Coal           | 0         | 0     | 0     | 0       | 0       | 0       |
| Petroleum Coke | 0         | 0     | 0     | 0       | 0       | 0       |
| Limestone      | 0.13      | 0.06  | 0.02  | 0.00382 | 0.00181 | 0.00057 |

(2 Transfer Points)

**Emission Rates - Controlled 99.50%**

| Raw Materials  | Long-Term |          |          |          |          |          |
|----------------|-----------|----------|----------|----------|----------|----------|
|                | PM        | PM10     | PM2.5    | PM       | PM10     | PM2.5    |
|                | (TPY)     | (TPY)    | (TPY)    | (g/s)    | (g/s)    | (g/s)    |
| Coal           | 0         | 0        | 0        | 0        | 0        | 0        |
| Petroleum Coke | 0         | 0        | 0        | 0        | 0        | 0        |
| Limestone      | 0.000663  | 0.000314 | 0.000099 | 0.000019 | 0.000009 | 0.000003 |

**References:**

Emission Factor - AP42 Chapter 13.2.4 Aggregate Handling and Storage Piles  
 Belt Speed - JEA Operation Data  
 Moisture Contents - JEA Operational Data  
 Transfer Rates - JEA Operational Data

### III. EMISSIONS UNIT INFORMATION

#### A. TYPE OF EMISSIONS UNIT (Regulated and Unregulated Emissions Units)

Emissions Unit Information Section 8

SJRPP - Limestone Silos (1DC-01 & 2DC-01)

#### Type of Emissions Unit Addressed in This Section

1. Regulated or Unregulated Emissions Unit? Check one :

- ☒ [ X ] 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.

2. Single Process, Group of Processes, or Fugitive Only? 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).
- ☒ [ X ] 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.

**B. GENERAL EMISSIONS UNIT INFORMATION  
(Regulated and Unregulated Emissions Units)**

**Emissions Unit Description and Status**

|                                                                                                               |                                      |                                                |
|---------------------------------------------------------------------------------------------------------------|--------------------------------------|------------------------------------------------|
| 1. Description of Emissions Unit Addressed in This Section :<br><br>SJRPP - Limestone Silos (1DC-01 & 2DC-01) |                                      |                                                |
| 2. Emissions Unit Identification Number : 051<br>[ ] No Corresponding ID [ ] Unknown                          |                                      |                                                |
| 3. Emissions Unit Status<br>Code : A                                                                          | 4. Acid Rain Unit?<br>[ ] Yes [X] No | 5. Emissions Unit Major<br>Group SIC Code : 49 |
| 6. Emissions Unit Comment :<br><br>Emissions Unit consists of 2 silos and the associated transfer points.     |                                      |                                                |



**Emissions Unit Information Section** 8

SJRPP - Limestone Silos (1DC-01 & 2DC-01)

**Emissions Unit Control Equipment** 1

|                                    |    |
|------------------------------------|----|
| 1. Description :<br>Silo #1        |    |
| 2. Control Device or Method Code : | 18 |

**Emissions Unit Information Section** 8

SJRPP - Limestone Silos (1DC-01 & 2DC-01)

**Emissions Unit Control Equipment** 2

|                                    |    |
|------------------------------------|----|
| 1. Description :<br>Silo #2        |    |
| 2. Control Device or Method Code : | 18 |

**C. EMISSIONS UNIT DETAIL INFORMATION**  
(Regulated Emissions Units Only)

**Emissions Unit Information Section** 8  
SJRPP - Limestone Silos (1DC-01 & 2DC-01)

**Emissions Unit Details**

|                                       |             |                    |
|---------------------------------------|-------------|--------------------|
| 1. Initial Startup Date :             | 01-Dec-1986 |                    |
| 2. Long-term Reserve Shutdown Date :  |             |                    |
| 3. Package Unit :                     |             |                    |
| Manufacturer :                        |             | Model Number :     |
| 4. Generator Nameplate Rating :       | MW          |                    |
| 5. Incinerator Information :          |             |                    |
| Dwell Temperature :                   |             | Degrees Fahrenheit |
| Dwell Time :                          |             | Seconds            |
| Incinerator Afterburner Temperature : |             | Degrees Fahrenheit |

**Emissions Unit Operating Capacity**

|                                         |          |               |
|-----------------------------------------|----------|---------------|
| 1. Maximum Heat Input Rate :            | mmBtu/hr |               |
| 2. Maximum Incinerator Rate :           | lb/hr    | tons/day      |
| 3. Maximum Process or Throughput Rate : | 300      | tons per hour |
| 4. Maximum Production Rate :            |          |               |
| 5. Operating Capacity Comment :         |          |               |

**Emissions Unit Operating Schedule**

|                                        |                  |
|----------------------------------------|------------------|
| Requested Maximum Operating Schedule : |                  |
| 24 hours/day                           | 7 days/week      |
| 52 weeks/year                          | 8,760 hours/year |

**D. EMISSIONS UNIT REGULATIONS  
(Regulated Emissions Units Only)**

**Emissions Unit Information Section**     8  
SJRPP - Limestone Silos (1DC-01 & 2DC-01)

**Rule Applicability Analysis**

Units were subject to PSD Review including the application of BACT.

**List of Applicable Regulations**

Rule 62-204.800(7)(e), F.A.C., Adoption of the NSPS Appendices (As Noted)

Rule 62-210.300(5), F.A.C., Notification of Start-up

Jacksonville Environmental Protection Board, Rule 2 - Air Pollution (as noted)

Rule 62-210.550, F.A.C., Stack Height Policy

Rule 62-210.650, F.A.C., Circumvention

Rule 62-297.310, F.A.C., General Test Requirements

Rule 62-297.401(5) & (9), F.A.C., EPA Methods 5 and 9

Rule 62-210.700(1), (4), & (6), F.A.C., Excess Emissions

Rule 2.105, Maintenance of Air Pollution Control Devices

Rule 2.301, Adoption of Chapter 62-210, F.A.C., (As Noted)

Rule 2.1101, Adoption of Chapter 62-297, F.A.C., (As Noted)

Rule 62-210.300(1), F.A.C., Air Construction Permits

III. Part 6b - 1

DEP Form No. 62-210.900(1) - Form  
Effective : 3-21-96

## E. EMISSION POINT (STACK/VENT) INFORMATION

### Emissions Unit Information Section 8

SJRPP - Limestone Silos (1DC-01 & 2DC-01)

#### Emission Point Description and Type :

|                                                                                      |                                                      |
|--------------------------------------------------------------------------------------|------------------------------------------------------|
| 1. Identification of Point on Plot Plan or Flow Diagram :                            | EU051                                                |
| 2. Emission Point Type Code :                                                        | 3                                                    |
| 3. Descriptions of Emission Points Comprising this Emissions Unit :                  | 1DC-01                                               |
| 4. ID Numbers or Descriptions of Emission Units with this Emission Point in Common : | 1DC-01                                               |
| 5. Discharge Type Code :                                                             | H                                                    |
| 6. Stack Height :                                                                    | 114 feet                                             |
| 7. Exit Diameter :                                                                   | 0.95 feet                                            |
| 8. Exit Temperature :                                                                | 68 °F                                                |
| 9. Actual Volumetric Flow Rate :                                                     | 2,700 acfm                                           |
| 10. Percent Water Vapor :                                                            | 2.00 %                                               |
| 11. Maximum Dry Standard Flow Rate :                                                 | 2,700 dscfm                                          |
| 12. Nonstack Emission Point Height :                                                 | feet                                                 |
| 13. Emission Point UTM Coordinates :                                                 | Zone : 17 East (km) : 447.223 North (km) : 3,366.594 |
| 14. Emission Point Comment :                                                         |                                                      |

III. Part 7b - 1

DEP Form No. 62-210.900(1) - Form  
Effective : 3-21-96

## E. EMISSION POINT (STACK/VENT) INFORMATION

### Emissions Unit Information Section 8

SJRPP - Limestone Silos (1DC-01 & 2DC-01)

#### Emission Point Description and Type :

|                                                                                      |             |
|--------------------------------------------------------------------------------------|-------------|
| 1. Identification of Point on Plot Plan or Flow Diagram :                            | EU051       |
| 2. Emission Point Type Code :                                                        | 3           |
| 3. Descriptions of Emission Points Comprising this Emissions Unit :                  | 2DC-01      |
| 4. ID Numbers or Descriptions of Emission Units with this Emission Point in Common : | 1DC-01      |
| 5. Discharge Type Code :                                                             | H           |
| 6. Stack Height :                                                                    | 114 feet    |
| 7. Exit Diameter :                                                                   | 0.95 feet   |
| 8. Exit Temperature :                                                                | 68 °F       |
| 9. Actual Volumetric Flow Rate :                                                     | 2,700 acfm  |
| 10. Percent Water Vapor :                                                            | 2.00 %      |
| 11. Maximum Dry Standard Flow Rate :                                                 | 2,700 dscfm |
| 12. Nonstack Emission Point Height :                                                 | feet        |
| 13. Emission Point UTM Coordinates :                                                 |             |
| Zone : 17 East (km) : 447.223 North (km) : 3,366.594                                 |             |
| 14. Emission Point Comment :                                                         |             |

III. Part 7b - 2

## F. SEGMENT (PROCESS/FUEL) INFORMATION

Emissions Unit Information Section 8

SJRPP - Limestone Silos (1DC-01 & 2DC-01)

**Segment Description and Rate :** Segment 1

|                                                                                                    |                                     |
|----------------------------------------------------------------------------------------------------|-------------------------------------|
| 1. Segment Description (Process/Fuel Type and Associated Operating Method/Mode) :<br><br>Limestone |                                     |
| 2. Source Classification Code (SCC) : 30501099                                                     |                                     |
| 3. SCC Units : Tons Transferred Or Handled                                                         |                                     |
| 4. Maximum Hourly Rate : 300.00                                                                    | 5. Maximum Annual Rate : 600,000.00 |
| 6. Estimated Annual Activity Factor : 0.00                                                         |                                     |
| 7. Maximum Percent Sulfur :                                                                        | 8. Maximum Percent Ash :            |
| 9. Million Btu per SCC Unit :                                                                      |                                     |
| 10. Segment Comment :                                                                              |                                     |

III. Part 8 - 1

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Effective : 3-21-96



**G. EMISSIONS UNIT POLLUTANTS**  
**(Regulated and Unregulated Emissions Units)**

**Emissions Unit Information Section**      8  
SJRPP - Limestone Silos (1DC-01 & 2DC-01)

| 1. Pollutant Emitted | 2. Primary Control Device Code | 3. Secondary Control Device Code | 4. Pollutant Regulatory Code |
|----------------------|--------------------------------|----------------------------------|------------------------------|
| 1 - PM               | 018                            |                                  | EL                           |
| 2 - PM10             | 018                            |                                  | EL                           |

III. Part 9a - 1

DEP Form No. 62-210.900(1) - Form  
Effective : 3-21-96

**H. EMISSIONS UNIT POLLUTANT DETAIL INFORMATION**  
**(Regulated Emissions Units Only - Emissions Limited Pollutants Only)**

**Emissions Unit Information Section**      8

SJRPP - Limestone Silos (1DC-01 & 2DC-01)

**Pollutant Potential/Estimated Emissions :**      Pollutant      1

|                                                                                                                                                                  |                      |                     |
|------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------------|---------------------|
| 1. Pollutant Emitted : <b>PM</b>                                                                                                                                 |                      |                     |
| 2. Total Percent Efficiency of Control :                                                                                                                         | 99.80                | %                   |
| 3. Potential Emissions :                                                                                                                                         | 0.0006600    lb/hour | 0.0006600 tons/year |
| 4. Synthetically Limited?<br><input type="checkbox"/> Yes <input checked="" type="checkbox"/> No                                                                 |                      |                     |
| 5. Range of Estimated Fugitive/Other Emissions:<br><div style="text-align: right; margin-right: 100px;">to</div> <div style="text-align: right;">tons/year</div> |                      |                     |
| 6. Emissions Factor                                                                                                                                              | 0                    | Units    lb/ton     |
| Reference    AP-42, (EF=0.00022)                                                                                                                                 |                      |                     |
| 7. Emissions Method Code :      3                                                                                                                                |                      |                     |
| 8. Calculations of Emissions :<br><br>See Attachment EU051-05                                                                                                    |                      |                     |
| 9. Pollutant Potential/Estimated Emissions Comment :                                                                                                             |                      |                     |

III. Part 9b -    1

**H. EMISSIONS UNIT POLLUTANT DETAIL INFORMATION**  
**(Regulated Emissions Units Only - Emissions Limited Pollutants Only)**

**Emissions Unit Information Section**      8  
SJRPP - Limestone Silos (1DC-01 & 2DC-01)

**Pollutant Potential/Estimated Emissions :**      Pollutant      2

|                                                                                                                                                                  |                   |                     |
|------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------|---------------------|
| 1. Pollutant Emitted : <b>PM10</b>                                                                                                                               |                   |                     |
| 2. Total Percent Efficiency of Control :                                                                                                                         | 99.80             | %                   |
| 3. Potential Emissions :                                                                                                                                         | 0.0003000 lb/hour | 0.0003000 tons/year |
| 4. Synthetically Limited?<br>[   ] Yes                    [X ] No                                                                                                |                   |                     |
| 5. Range of Estimated Fugitive/Other Emissions:<br><div style="text-align: right; margin-right: 100px;">to</div> <div style="text-align: right;">tons/year</div> |                   |                     |
| 6. Emissions Factor                                                                                                                                              | 0                 | Units lb/ton        |
| Reference    AP-42, (EF=0.0001)                                                                                                                                  |                   |                     |
| 7. Emissions Method Code :      3                                                                                                                                |                   |                     |
| 8. Calculations of Emissions :<br><br>See Attachment EU051-05                                                                                                    |                   |                     |
| 9. Pollutant Potential/Estimated Emissions Comment :                                                                                                             |                   |                     |

III. Part 9b - 2

**Emissions Unit Information Section** 8  
SJRPP - Limestone Silos (1DC-01 & 2DC-01)

**Pollutant Information Section** 1

**Allowable Emissions** 1

|                                                                                     |                                                                                                     |                 |                |
|-------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------|-----------------|----------------|
| 1. Basis for Allowable Emissions Code :                                             | OTHER                                                                                               |                 |                |
| 2. Future Effective Date of Allowable Emissions :                                   | 01-Aug-1999                                                                                         |                 |                |
| 3. Requested Allowable Emissions and Units :                                        | 5.00                                                                                                | percent opacity |                |
| 4. Equivalent Allowable Emissions :                                                 | 1.92                                                                                                | lb/hour         | 8.41 tons/year |
| 5. Method of Compliance :                                                           | Stack Test Waiver Requested Rule 62-297.310(7)(c), F.A.C.                                           |                 |                |
| 6. Pollutant Allowable Emissions Comment (Desc. of Related Operating Method/Mode) : | Updated BACT revised from 10% opacity to a requested no visible emissions limitation (5% Opacity).. |                 |                |

III. Part 9c - 1

**Emissions Unit Information Section** 8  
SJRPP - Limestone Silos (1DC-01 & 2DC-01)

**Pollutant Information Section** 2

**Allowable Emissions** 1

|                                                                                     |                                                                                                    |                 |                |
|-------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------|-----------------|----------------|
| 1. Basis for Allowable Emissions Code :                                             | OTHER                                                                                              |                 |                |
| 2. Future Effective Date of Allowable Emissions :                                   | 01-Aug-1999                                                                                        |                 |                |
| 3. Requested Allowable Emissions and Units :                                        | 5.00                                                                                               | percent opacity |                |
| 4. Equivalent Allowable Emissions :                                                 | 0.22                                                                                               | lb/hour         | 0.96 tons/year |
| 5. Method of Compliance :                                                           | Stack Test Waiver Requested Rule 62-297.310(7)(c), F.A.C.                                          |                 |                |
| 6. Pollutant Allowable Emissions Comment (Desc. of Related Operating Method/Mode) : | Updated BACT revised from 10% opacity to a requested no visible emissions limitation (5% Opacity). |                 |                |

III. Part 9c - 2

**I. VISIBLE EMISSIONS INFORMATION**  
**(Regulated Emissions Units Only)**

**Emissions Unit Information Section** 8  
SJRPP - Limestone Silos (1DC-01 & 2DC-01)

**Visible Emissions Limitation :** Visible Emissions Limitation 1

|                                                                                                                                                                                                                                                                                                         |
|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 1. Visible Emissions Subtype :                      05                                                                                                                                                                                                                                                  |
| 2. Basis for Allowable Opacity :                      OTHER                                                                                                                                                                                                                                             |
| 3. Requested Allowable Opacity :<br><div style="text-align: right; margin-top: 10px;">Normal Conditions :              5                      %<br/>Exceptional Conditions :              100                      %<br/>Maximum Period of Excess Opacity Allowed :                      min/hour</div> |
| 4. Method of Compliance :<br><br>EPA Method 9                                                                                                                                                                                                                                                           |
| 5. Visible Emissions Comment :<br><br>Updated BACT revised from 10% opacity to a requested no visible emissions limitation (5% Opacity).<br><br>Excess Emissions - 2 hours in any 24-hour period.                                                                                                       |

III. Part 10 - 1

**J. CONTINUOUS MONITOR INFORMATION**  
**(Regulated Emissions Units Only)**

**Emissions Unit Information Section**

III. Part 11 - 1

DEP Form No. 62-210.900(1) - Form  
Effective : 3-21-96

## K. PREVENTION OF SIGNIFICANT DETERIORATION (PSD) INCREMENT TRACKING INFORMATION

Emissions Unit Information Section 8

SJRPP - Limestone Silos (1DC-01 & 2DC-01)

### PSD Increment Consumption Determination

#### 1. Increment Consuming for Particulate Matter or Sulfur Dioxide?

- ☐ The emissions unit is undergoing PSD review as part of this application, or has undergone PSD review previously, for particulate matter or sulfur dioxide. If so, emissions unit consumes increment.
- ☐ The facility addressed in this application is classified as an EPA major source pursuant to paragraph (c) of the definition of "major source of air pollution" in Chapter 62-213, F.A.C., and the emissions unit addressed in this section commenced (or will commence) construction after January 6, 1975. If so, baseline emissions are zero, and emissions unit consumes increment.
- ☐ The facility addressed in this application is classified as an EPA major source, and the emissions unit began initial operation after January 6, 1975, but before December 27, 1977. If so, baseline emissions are zero, and emissions unit consumes increment.
- ☒ For any facility, the emissions unit began (or will begin) initial operation after December 27, 1977. If so, baseline emissions are zero, and emissions unit consumes increment.
- ☐ None of the above apply. If so, the baseline emissions of the emissions unit are nonzero. In such case, additional analysis, beyond the scope of this application, is needed to determine whether changes in emissions have occurred (or will occur) after the baseline date that may consume or expand increment.



## 2. Increment Consuming for Nitrogen Dioxide?

- ☐ The emissions unit addressed in this section is undergoing PSD review as part of this application, or has undergone PSD review previously, for nitrogen dioxide. If so, emissions unit consumes increment.
- ☐ The facility addressed in this application is classified as an EPA major source pursuant to paragraph (c) of the definition of "major source of air pollution" in Chapter 62-213, F.A.C., and the emissions unit addressed in this section commenced (or will commence) construction after February 8, 1988. If so, baseline emissions are zero, and emissions unit consumes increment.
- ☐ The facility addressed in this application is classified as an EPA major source, and the emissions unit began initial operation after February 8, 1988, but before March 28, 1988. If so, baseline emissions are zero, and emissions unit consumes increment.
- ☐ For any facility, the emissions unit began (or will begin) initial operation after March 28, 1988. If so, baseline emissions are zero, and emissions unit consumes increment.
- ☐ None of the above apply. If so, baseline emissions of the emissions unit are nonzero. In such case, additional analysis, beyond the scope of this application, is needed to determine whether changes in emissions have occurred (or will occur) after the baseline date that may consume or expand increment.

|                                         |        |         |                  |
|-----------------------------------------|--------|---------|------------------|
| 3. Increment Consuming/Expanding Code : |        |         |                  |
| PM :                                    | C      | SO2 :   | U                |
|                                         |        | NO2 :   | U                |
| 4. Baseline Emissions :                 |        |         |                  |
| PM :                                    | 0.0000 | lb/hour | 0.0000 tons/year |
| SO2 :                                   |        | lb/hour | tons/year        |
| NO2 :                                   |        |         | tons/year        |
| 5. PSD Comment :                        |        |         |                  |
|                                         |        |         |                  |

### III. Part 12 - 2

## L. EMISSIONS UNIT SUPPLEMENTAL INFORMATION

Emissions Unit Information Section 8

SJRPP - Limestone Silos (1DC-01 & 2DC-01)

### Supplemental Requirements for All Applications

|                                                                   |          |
|-------------------------------------------------------------------|----------|
| 1. Process Flow Diagram :                                         | EU051-01 |
| 2. Fuel Analysis or Specification :                               | NA       |
| 3. Detailed Description of Control Equipment :                    | EU051-02 |
| 4. Description of Stack Sampling Facilities :                     | EU051-03 |
| 5. Compliance Test Report :                                       | EU051-04 |
| 6. Procedures for Startup and Shutdown :                          | NA       |
| 7. Operation and Maintenance Plan :                               | NA       |
| 8. Supplemental Information for Construction Permit Application : | EU051-05 |
| 9. Other Information Required by Rule or Statue :                 | NA       |

### Additional Supplemental Requirements for Category I Applications Only

|                                                          |
|----------------------------------------------------------|
| 10. Alternative Methods of Operations :                  |
| 11. Alternative Modes of Operation (Emissions Trading) : |

III. Part 13 - 1

12. Identification of Additional Applicable Requirements :

13. Compliance Assurance Monitoring  
Plan :

14. Acid Rain Application (Hard-copy Required) :

Acid Rain Part - Phase II (Form No. 62-210.900(1)(a))

Repowering Extension Plan (Form No. 62-210.900(1)(a)1.)

New Unit Exemption (Form No. 62-210.900(1)(a)2.)

Retired Unit Exemption (Form No. 62-210.900(1)(a)3.)

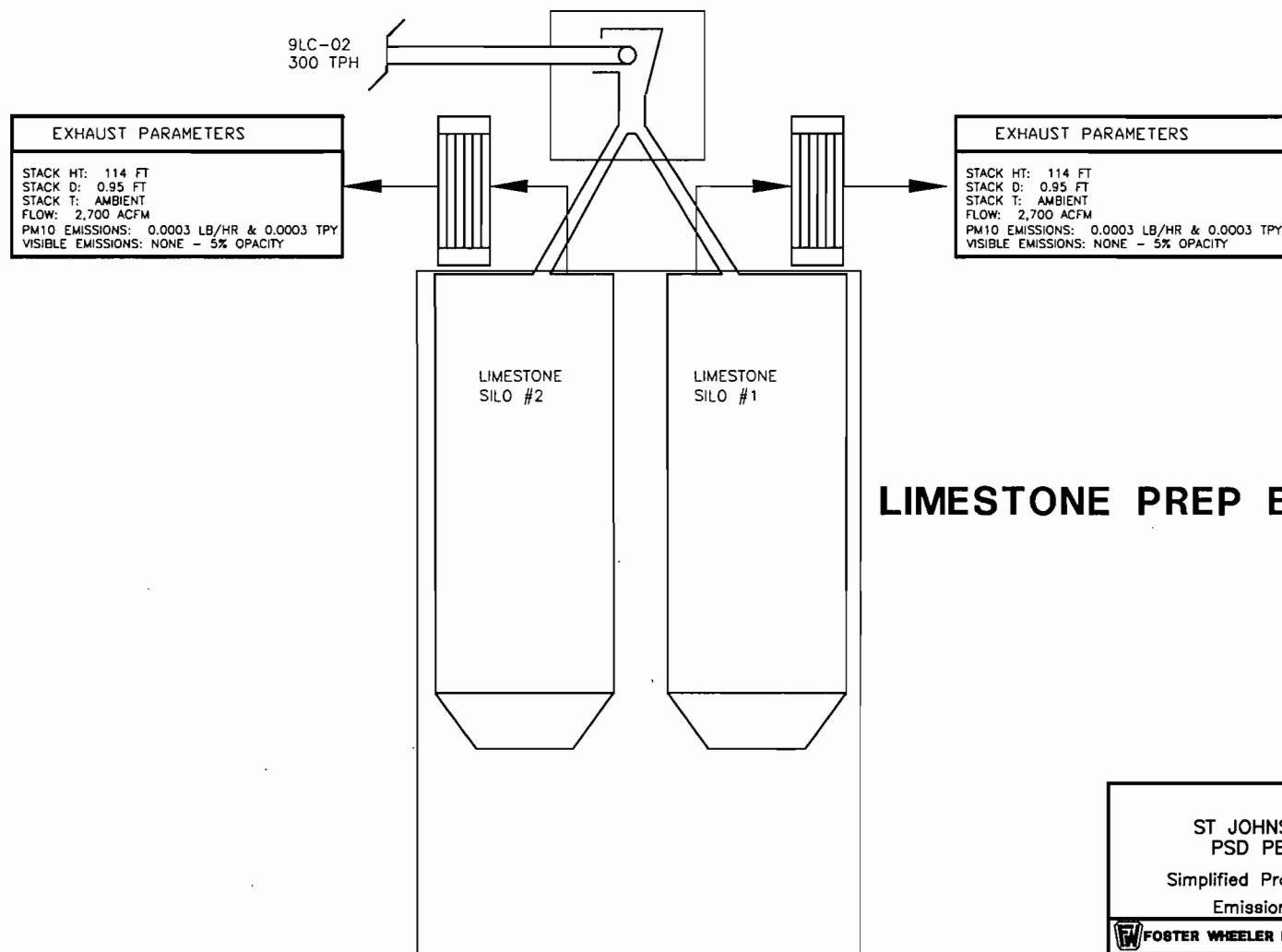
**EMISSIONS UNIT EU051**  
**Limestone Silos (1DC-01 & 2DC-01)**

**ATTACHMENT EU051-01**  
**Process Flow Diagram**

# ST JOHNS RIVER POWER PARK

## LIMESTONE SILOS, TRANSFER POINTS

### ATTACHMENT EU051-01



|                                                                                                                    |                                 |                   |                                                       |
|--------------------------------------------------------------------------------------------------------------------|---------------------------------|-------------------|-------------------------------------------------------|
| <b>JEA</b><br>ST JOHNS POWER PARK<br>PSD PERMIT UPDATE<br>Simplified Process Flow Diagram<br>Emissions Unit ID 051 |                                 |                   |                                                       |
| <b>FOSTER WHEELER ENVIRONMENTAL CORPORATION</b>                                                                    |                                 |                   |                                                       |
| SCALE N/A                                                                                                          | PREPARED<br>CHECKED<br>APPROVED | DJG<br>MAE<br>DJF | CAD FILE NO.<br>EU051PF.DWG<br>FIGURE NO.<br>EU051-01 |
| DATE: 02/16/99                                                                                                     |                                 |                   |                                                       |

**EMISSIONS UNIT EU051**  
**Limestone Silos (1DC-01 & 2DC-01)**

**ATTACHMENT EU051-02**  
**Control Equipment Description**

**Emissions Unit EU051**

**JRPP - Limestone Silos (1DC-01 & 2DC-01)**

**Control Equipment Description**

**Control Equipment**

**Two Separate Fabric Filters/Baghouses - Existing Equipment**

**Exhaust Parameters**

**Stack Height: 114 feet; Stack Diameter: 11.5 inches; Stack Exhaust Temperature: Ambient; and Stack Flows 2,700 ACFM per stack**

**Reasonable Assurances**

**Emission Limitation - No Visible Emissions (5% Opacity)**

**See Attachment EU051-04, Compliance Test Reports**

**EMISSIONS UNIT EU051**  
**Limestone Silos (1DC-01 & 2DC-01)**

**ATTACHMENT EU051-03**  
**Stack Sampling Facilities Description**



## **STACK SAMPLING FACILITIES DESCRIPTION**

Pursuant to Rule 62-297.310(6), F.A.C. JEA will ensure that the required stack sampling facilities include sampling ports (Rule 62-297.310(6)(c), F.A.C.), work platforms (Rule 62-297.310(6)(d), F.A.C.), access to work platforms (Rule 62-297.310(6)(e), F.A.C.), electrical power (Rule 62-297.310(6)(f), F.A.C.), and sampling equipment support (Rule 62-297.310(6)(g), F.A.C.). All stack sampling facilities will meet any Occupational Safety and Health Administration (OSHA) Safety and Health Standards described in 29 CFR Part 1910, Subparts D and E.

In accordance with Rule 62-297.310(6)(b), F.A.C., JEA will use temporary stack sampling facilities for the existing units which are not required to conduct a compliance test on at least an annual basis may use. When electing to use temporary sampling facilities on an emissions unit, and the Department elects to test the unit, JEA will install the temporary facilities on the emissions unit within 5 days of a request by the Department. The temporary sampling facilities will remain on the emissions unit until the test is completed.

**EMISSIONS UNIT EU051**  
**Limestone Silos (1DC-01 & 2DC-01)**

**ATTACHMENT EU051-04**  
**Compliance Test Report**

Client TEA Observer Dale Vineyard  
 Object No. 98-18872 Date 10-12-98  
 Plant Name St John River Power Pack Observation began 10:15  
 Location Jacksonville FL ended 11:15  
 Type of Facility Power Plant

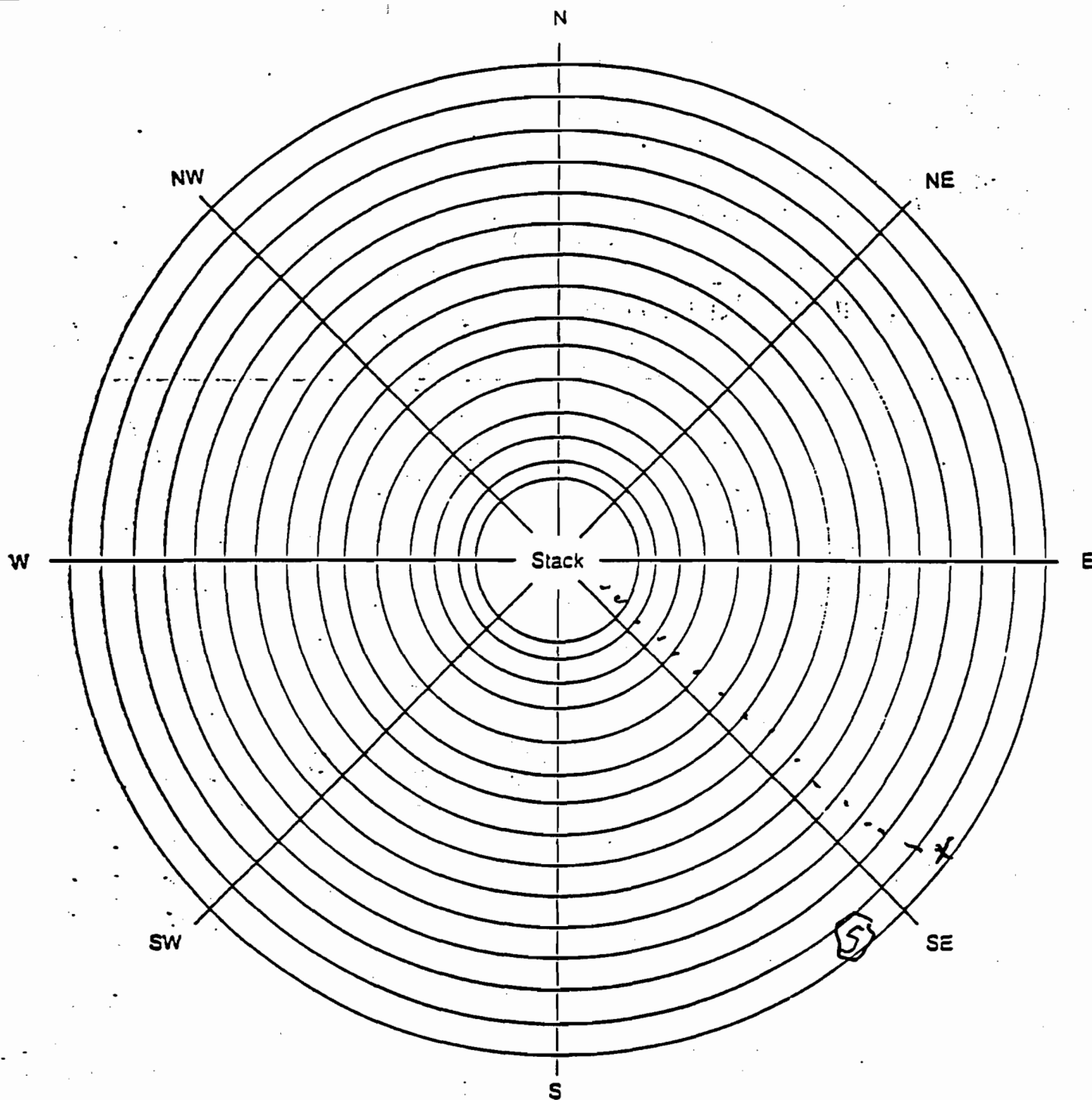
| Source Identification<br>(Stack, Duct, etc.)         | Min. | Seconds |    |    |    | Min. | Seconds |    |    |    |
|------------------------------------------------------|------|---------|----|----|----|------|---------|----|----|----|
|                                                      |      | 0       | 15 | 30 | 45 |      | 0       | 15 | 30 | 45 |
| <u>Loader (Duct at Top)</u>                          | 0    | 0       | 0  | 0  | 0  | 30   | 0       | 0  | 0  | 0  |
|                                                      | 1    | 0       | 0  | 0  | 0  | 31   | 0       | 0  | 0  | 0  |
|                                                      | 2    | 0       | 0  | 0  | 0  | 32   | 0       | 0  | 0  | 0  |
|                                                      | 3    | 0       | 0  | 0  | 0  | 33   | 0       | 0  | 0  | 0  |
| Observer Location<br>(Diagram on back of sheet)      | 4    | 0       | 0  | 0  | 0  | 34   | 0       | 0  | 0  | 0  |
| Distance from Observer to source <u>350'</u>         | 5    | 0       | 0  | 0  | 0  | 35   | 0       | 0  | 0  | 0  |
| Height of Source (above ground) <u>50'</u>           | 6    | 0       | 0  | 0  | 0  | 36   | 0       | 0  | 0  | 0  |
| Weather Conditions                                   | 7    | 0       | 0  | 0  | 0  | 37   | 0       | 0  | 0  | 0  |
| Wind Direction <u>N E</u>                            | 8    | 0       | 0  | 0  | 0  | 38   | 0       | 0  | 0  | 0  |
| Wind Speed <u>5 to 10</u>                            | 9    | 0       | 0  | 0  | 0  | 39   | 0       | 0  | 0  | 0  |
| Temperature <u>72</u>                                | 10   | 0       | 0  | 0  | 0  | 40   | 0       | 0  | 0  | 0  |
| Position of Sun <u>SE</u>                            | 11   | 0       | 0  | 0  | 0  | 41   | 0       | 0  | 0  | 0  |
| Sky Condition <u>overcast</u>                        | 12   | 0       | 0  | 0  | 0  | 42   | 0       | 0  | 0  | 0  |
| (clear, overcast, %clouds,<br>color of clouds, etc.) | 13   | 0       | 0  | 0  | 0  | 43   | 0       | 0  | 0  | 0  |
|                                                      | 14   | 0       | 0  | 0  | 0  | 44   | 0       | 0  | 0  | 0  |
| Plume Description                                    | 15   | 0       | 0  | 0  | 0  | 45   | 0       | 0  | 0  | 0  |
| Color <u>White</u>                                   | 16   | 0       | 0  | 0  | 0  | 46   | 0       | 0  | 0  | 0  |
| Background <u>Sky</u>                                | 17   | 0       | 0  | 0  | 0  | 47   | 0       | 0  | 0  | 0  |
| Type (wet or dry) <u>Dry</u> Dist. _____             | 18   | 0       | 0  | 0  | 0  | 48   | 0       | 0  | 0  | 0  |
| Comments                                             | 19   | 0       | 0  | 0  | 0  | 49   | 0       | 0  | 0  | 0  |
|                                                      | 20   | 0       | 0  | 0  | 0  | 50   | 0       | 0  | 0  | 0  |
|                                                      | 21   | 0       | 0  | 0  | 0  | 51   | 0       | 0  | 0  | 0  |
|                                                      | 22   | 0       | 0  | 0  | 0  | 52   | 0       | 0  | 0  | 0  |
|                                                      | 23   | 0       | 0  | 0  | 0  | 53   | 0       | 0  | 0  | 0  |
|                                                      | 24   | 0       | 0  | 0  | 0  | 54   | 0       | 0  | 0  | 0  |
|                                                      | 25   | 0       | 0  | 0  | 0  | 55   | 0       | 0  | 0  | 0  |
| Observers Signature <u>Dale Vineyard</u>             | 26   | 0       | 0  | 0  | 0  | 56   | 0       | 0  | 0  | 0  |
| Date of Last EPA Method 9 Examination <u>10-7-98</u> | 27   | 0       | 0  | 0  | 0  | 57   | 0       | 0  | 0  | 0  |
| Examination Passed in EPA Region <u>Eastern</u>      | 28   | 0       | 0  | 0  | 0  | 58   | 0       | 0  | 0  | 0  |
|                                                      | 29   | 0       | 0  | 0  | 0  | 59   | 0       | 0  | 0  | 0  |

\*If wet, distance (ft.) from plume outlet to point in plume where observations made



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0/6



LOCATE THE FOLLOWING ON THE DIAGRAM

1. The stack configuration with the stack under observation in the center
2. Observer's position using X to indicate position.
3. Arrow pointing direction wind is blowing.
4. Dotted line between observer and plume indicating observers line of sight when making readings.
5. Circle with S in center to indicate sun location.
6. Any large structures or significant topographical features.

NOTE: Stack configuration is not proportional to distances in feet from stack in the diagram.



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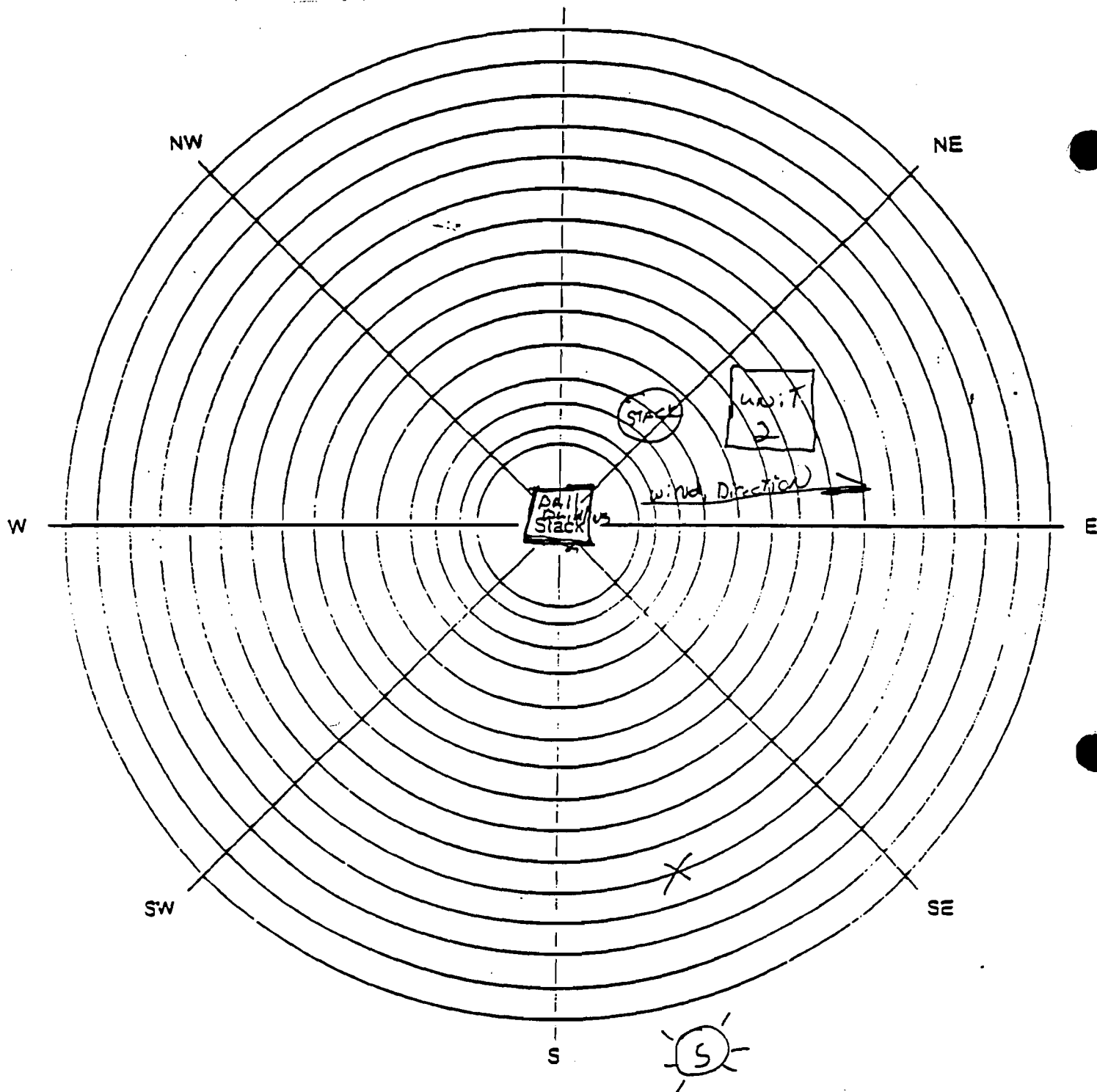
ent TEA Observer John Sutton  
 Subject No. 97-422 Date 11-2-97  
 ant Name STRIP Observation began 1025  
 can JACKSONVILLE FL. ended 1125  
 pe of Facility POWER PLANT (Limestone Handling) Ballmill Building

| Source Identification<br>(Stack, Duct, etc.)                                                                                                                                                                                                        | Min. | Seconds |    |    |    | Min. | Seconds |    |    |    |
|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------|---------|----|----|----|------|---------|----|----|----|
|                                                                                                                                                                                                                                                     |      | 0       | 15 | 30 | 45 |      | 0       | 15 | 30 | 45 |
| STACK (Limestone silos)                                                                                                                                                                                                                             | 0    | 0       | 0  | 0  | 0  | 30   | 0       | 0  | 0  | 0  |
|                                                                                                                                                                                                                                                     | 1    | 0       | 0  | 0  | 0  | 31   | 0       | 0  | 0  | 0  |
|                                                                                                                                                                                                                                                     | 2    | 0       | 0  | 0  | 0  | 32   | 0       | 0  | 0  | 0  |
|                                                                                                                                                                                                                                                     | 3    | 0       | 0  | 0  | 0  | 33   | 0       | 0  | 0  | 0  |
|                                                                                                                                                                                                                                                     | 4    | 0       | 0  | 0  | 0  | 34   | 0       | 0  | 0  | 0  |
| Observer Location<br>(Diagram on back of sheet)<br>Distance from Observer to source <u>800'</u><br>Height of Source (above ground) <u>140'</u>                                                                                                      | 5    | 0       | 0  | 0  | 0  | 35   | 0       | 0  | 0  | 0  |
|                                                                                                                                                                                                                                                     | 6    | 0       | 0  | 0  | 0  | 36   | 0       | 0  | 0  | 0  |
|                                                                                                                                                                                                                                                     | 7    | 0       | 0  | 0  | 0  | 37   | 0       | 0  | 0  | 0  |
|                                                                                                                                                                                                                                                     | 8    | 0       | 0  | 0  | 0  | 38   | 0       | 0  | 0  | 0  |
|                                                                                                                                                                                                                                                     | 9    | 0       | 0  | 0  | 0  | 39   | 0       | 0  | 0  | 0  |
| Weather Conditions<br>Wind Direction <u>DE</u><br>Wind Speed <u>0-5 MPH</u><br>Temperature <u>65</u><br>Position of Sun <u>SE</u><br>Sky Condition <u>25% clouds</u><br>(clear, overcast, hazy, etc.)<br>color of clouds, etc.) <u>white clouds</u> | 10   | 0       | 0  | 0  | 0  | 40   | 0       | 0  | 0  | 0  |
|                                                                                                                                                                                                                                                     | 11   | 0       | 0  | 0  | 0  | 41   | 0       | 0  | 0  | 0  |
|                                                                                                                                                                                                                                                     | 12   | 0       | 0  | 0  | 0  | 42   | 0       | 0  | 0  | 0  |
|                                                                                                                                                                                                                                                     | 13   | 0       | 0  | 0  | 0  | 43   | 0       | 0  | 0  | 0  |
|                                                                                                                                                                                                                                                     | 14   | 0       | 0  | 0  | 0  | 44   | 0       | 0  | 0  | 0  |
| Plume Description<br>Color <u>SKY</u><br>Background <u>SKY</u><br>Type (wet or dry) <u>Dry</u> Dist. <u></u>                                                                                                                                        | 15   | 0       | 0  | 0  | 0  | 45   | 0       | 0  | 0  | 0  |
|                                                                                                                                                                                                                                                     | 16   | 0       | 0  | 0  | 0  | 46   | 0       | 0  | 0  | 0  |
|                                                                                                                                                                                                                                                     | 17   | 0       | 0  | 0  | 0  | 47   | 0       | 0  | 0  | 0  |
|                                                                                                                                                                                                                                                     | 18   | 0       | 0  | 0  | 0  | 48   | 0       | 0  | 0  | 0  |
|                                                                                                                                                                                                                                                     | 19   | 0       | 0  | 0  | 0  | 49   | 0       | 0  | 0  | 0  |
| Comments                                                                                                                                                                                                                                            | 20   | 0       | 0  | 0  | 0  | 50   | 0       | 0  | 0  | 0  |
|                                                                                                                                                                                                                                                     | 21   | 0       | 0  | 0  | 0  | 51   | 0       | 0  | 0  | 0  |
|                                                                                                                                                                                                                                                     | 22   | 0       | 0  | 0  | 0  | 52   | 0       | 0  | 0  | 0  |
|                                                                                                                                                                                                                                                     | 23   | 0       | 0  | 0  | 0  | 53   | 0       | 0  | 0  | 0  |
|                                                                                                                                                                                                                                                     | 24   | 0       | 0  | 0  | 0  | 54   | 0       | 0  | 0  | 0  |
|                                                                                                                                                                                                                                                     | 25   | 0       | 0  | 0  | 0  | 55   | 0       | 0  | 0  | 0  |
|                                                                                                                                                                                                                                                     | 26   | 0       | 0  | 0  | 0  | 56   | 0       | 0  | 0  | 0  |
|                                                                                                                                                                                                                                                     | 27   | 0       | 0  | 0  | 0  | 57   | 0       | 0  | 0  | 0  |
|                                                                                                                                                                                                                                                     | 28   | 0       | 0  | 0  | 0  | 58   | 0       | 0  | 0  | 0  |
|                                                                                                                                                                                                                                                     | 29   | 0       | 0  | 0  | 0  | 59   | 0       | 0  | 0  | 0  |
| Observers Signature <u>John Sutton</u>                                                                                                                                                                                                              |      |         |    |    |    |      |         |    |    |    |
| Date of Last EPA Method 9 Examination <u>OCTOBER 1997 (ETA)</u>                                                                                                                                                                                     |      |         |    |    |    |      |         |    |    |    |
| Examination Passed n EPA Region                                                                                                                                                                                                                     |      |         |    |    |    |      |         |    |    |    |

Notes: (1) from plume outlet to point in plume where observations made



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LOCATE THE FOLLOWING ON THE DIAGRAM

1. The stack configuration with the stack under observation in the center
2. Observer's position using X to indicate position.
3. Arrow pointing direction wind is blowing.
4. Dotted line between observer and plume indicating observers line of sight when making readings.
5. Circle with S in center to indicate sun location.
6. Any large structures or significant topographical features.

NOTE: Stack configuration is not proportional to distances in feet from stack in the diagram.



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**EMISSIONS UNIT EU051**  
**Limestone Silos (1DC-01 & 2DC-01)**

**ATTACHMENT EU051-05**  
**Emissions Estimates**

**Foster Wheeler Environmental Corporation**  
**EXCEL 7.0 Worksheet Calculation**

By: D. Graziani, P.E.  
 Date: 11/3/98  
 Ckd. By: Kim Evans, P.E.  
 Date: 11/10/98

Cal. No.: 901103DJG01  
 Project No.: 7830.0020.0056

Revision No.: 1

**Project:** St. Johns River Power Park PSD Permit Update  
**Subject:** Emissions Estimates for Limestone Silo #1 (1DC-01)

**Emissions Data**

| Raw Materials | Constant | Belt Speed<br>(MPH) | H2O<br>(%) | Particle Size Multipliers |      |       | Emission Factors (lb/ton) |         |         |
|---------------|----------|---------------------|------------|---------------------------|------|-------|---------------------------|---------|---------|
|               |          |                     |            | PM                        | PM10 | PM2.5 | PM                        | PM10    | PM2.5   |
| Limestone     | 0.0032   | 2.87                | 6.5        | 0.74                      | 0.35 | 0.11  | 0.00022                   | 0.00010 | 0.00003 |

**Operating Data**

| Raw Materials  | Operating Rates |        |
|----------------|-----------------|--------|
|                | (TPH)           | (TPY)  |
| Coal           | 0               | 0      |
| Petroleum Coke | 0               | 0      |
| Limestone      | 300             | 600000 |

**Emission Rates - Uncontrolled**

| Raw Materials  | Short-Term    |                 |                  |             |               |                |
|----------------|---------------|-----------------|------------------|-------------|---------------|----------------|
|                | PM<br>(lb/hr) | PM10<br>(lb/hr) | PM2.5<br>(lb/hr) | PM<br>(g/s) | PM10<br>(g/s) | PM2.5<br>(g/s) |
| Coal           | 0             | 0               | 0                | 0           | 0             | 0              |
| Petroleum Coke | 0             | 0               | 0                | 0           | 0             | 0              |
| Limestone      | 0.13          | 0.06            | 0.02             | 0.0167      | 0.0079        | 0.0025         |

(2 Transfer Points)

**Emission Rates - Controlled 99.50%**

| Raw Materials  | Short-Term    |                 |                  |             |               |                |
|----------------|---------------|-----------------|------------------|-------------|---------------|----------------|
|                | PM<br>(lb/hr) | PM10<br>(lb/hr) | PM2.5<br>(lb/hr) | PM<br>(g/s) | PM10<br>(g/s) | PM2.5<br>(g/s) |
| Coal           | 0             | 0               | 0                | 0           | 0             | 0              |
| Petroleum Coke | 0             | 0               | 0                | 0           | 0             | 0              |
| Limestone      | 0.000663      | 0.000314        | 0.000099         | 0.000084    | 0.000040      | 0.000012       |

**Emission Rates - Uncontrolled**

| Raw Materials  | Long-Term   |               |                |             |               |                |
|----------------|-------------|---------------|----------------|-------------|---------------|----------------|
|                | PM<br>(TPY) | PM10<br>(TPY) | PM2.5<br>(TPY) | PM<br>(g/s) | PM10<br>(g/s) | PM2.5<br>(g/s) |
| Coal           | 0           | 0             | 0              | 0           | 0             | 0              |
| Petroleum Coke | 0           | 0             | 0              | 0           | 0             | 0              |
| Limestone      | 0.13        | 0.06          | 0.02           | 0.00382     | 0.00181       | 0.00057        |

(2 Transfer Points)

**Emission Rates - Controlled 99.50%**

| Raw Materials  | Long-Term   |               |                |             |               |                |
|----------------|-------------|---------------|----------------|-------------|---------------|----------------|
|                | PM<br>(TPY) | PM10<br>(TPY) | PM2.5<br>(TPY) | PM<br>(g/s) | PM10<br>(g/s) | PM2.5<br>(g/s) |
| Coal           | 0           | 0             | 0              | 0           | 0             | 0              |
| Petroleum Coke | 0           | 0             | 0              | 0           | 0             | 0              |
| Limestone      | 0.000663    | 0.000314      | 0.000099       | 0.000019    | 0.000009      | 0.000003       |

**References:**

Emission Factor - AP42 Chapter 13.2.4 Aggregate Handling and Storage Piles  
 Belt Speed - JEA Operation Data  
 Moisture Contents - JEA Operational Data  
 Transfer Rates - JEA Operational Data



**Foster Wheeler Environmental Corporation  
EXCEL 7.0 Worksheet Calculation**

By: D. Graziani, P.E.  
Date: 11/3/98  
  
Ckd. By: Kim Evans, P.E.  
Date: 11/10/98

Cal. No.: 901103DJG01  
Project No.: 7830.0020.0056  
  
Revision No.: 1

**Project:** St. Johns River Power Park PSD Permit Update  
**Subject:** Emissions Estimates for Limestone Silo #2 (2DC-01)

**Emissions Data**

| Raw Materials | Constant | Belt Speed<br>(MPH) | H2O<br>(%) | Particle Size Multipliers |      |       | Emission Factors (lb/ton) |         |         |
|---------------|----------|---------------------|------------|---------------------------|------|-------|---------------------------|---------|---------|
|               |          |                     |            | PM                        | PM10 | PM2.5 | PM                        | PM10    | PM2.5   |
| Limestone     | 0.0032   | 2.87                | 6.5        | 0.74                      | 0.35 | 0.11  | 0.00022                   | 0.00010 | 0.00003 |

**Operating Data**

| Raw Materials  | Operating Rates |        |
|----------------|-----------------|--------|
|                | (TPH)           | (TPY)  |
| Coal           | 0               | 0      |
| Petroleum Coke | 0               | 0      |
| Limestone      | 300             | 600000 |

**Emission Rates - Uncontrolled**

| Raw Materials  | Short-Term    |                 |                  |             |               |                |
|----------------|---------------|-----------------|------------------|-------------|---------------|----------------|
|                | PM<br>(lb/hr) | PM10<br>(lb/hr) | PM2.5<br>(lb/hr) | PM<br>(g/s) | PM10<br>(g/s) | PM2.5<br>(g/s) |
| Coal           | 0             | 0               | 0                | 0           | 0             | 0              |
| Petroleum Coke | 0             | 0               | 0                | 0           | 0             | 0              |
| Limestone      | 0.13          | 0.06            | 0.02             | 0.0167      | 0.0079        | 0.0025         |

(2 Transfer Points)

**Emission Rates - Controlled 99.50%**

| Raw Materials  | Short-Term    |                 |                  |             |               |                |
|----------------|---------------|-----------------|------------------|-------------|---------------|----------------|
|                | PM<br>(lb/hr) | PM10<br>(lb/hr) | PM2.5<br>(lb/hr) | PM<br>(g/s) | PM10<br>(g/s) | PM2.5<br>(g/s) |
| Coal           | 0             | 0               | 0                | 0           | 0             | 0              |
| Petroleum Coke | 0             | 0               | 0                | 0           | 0             | 0              |
| Limestone      | 0.000663      | 0.000314        | 0.000099         | 0.000084    | 0.000040      | 0.000012       |

**Emission Rates - Uncontrolled**

| Raw Materials  | Long-Term   |               |                |             |               |                |
|----------------|-------------|---------------|----------------|-------------|---------------|----------------|
|                | PM<br>(TPY) | PM10<br>(TPY) | PM2.5<br>(TPY) | PM<br>(g/s) | PM10<br>(g/s) | PM2.5<br>(g/s) |
| Coal           | 0           | 0             | 0              | 0           | 0             | 0              |
| Petroleum Coke | 0           | 0             | 0              | 0           | 0             | 0              |
| Limestone      | 0.13        | 0.06          | 0.02           | 0.00382     | 0.00181       | 0.00057        |

(2 Transfer Points)

**Emission Rates - Controlled 99.50%**

| Raw Materials  | Long-Term   |               |                |             |               |                |
|----------------|-------------|---------------|----------------|-------------|---------------|----------------|
|                | PM<br>(TPY) | PM10<br>(TPY) | PM2.5<br>(TPY) | PM<br>(g/s) | PM10<br>(g/s) | PM2.5<br>(g/s) |
| Coal           | 0           | 0             | 0              | 0           | 0             | 0              |
| Petroleum Coke | 0           | 0             | 0              | 0           | 0             | 0              |
| Limestone      | 0.000663    | 0.000314      | 0.000099       | 0.000019    | 0.000009      | 0.000003       |

**References:**

Emission Factor - AP42 Chapter 13.2.4 Aggregate Handling and Storage Piles  
Belt Speed - JEA Operation Data  
Moisture Contents - JEA Operational Data  
Transfer Rates - JEA Operational Data

### III. EMISSIONS UNIT INFORMATION

#### A. TYPE OF EMISSIONS UNIT (Regulated and Unregulated Emissions Units)

Emissions Unit Information Section 9

SJRPP - Quick Lime Silo

#### Type of Emissions Unit Addressed in This Section

1. Regulated or Unregulated Emissions Unit? Check one :

- ☒ [ X ] 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.

2. Single Process, Group of Processes, or Fugitive Only? Check one :

- ☒ [ X ] 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.

**B. GENERAL EMISSIONS UNIT INFORMATION  
(Regulated and Unregulated Emissions Units)**

**Emissions Unit Description and Status**

|                                                                                             |                                      |                                                |
|---------------------------------------------------------------------------------------------|--------------------------------------|------------------------------------------------|
| 1. Description of Emissions Unit Addressed in This Section :<br><br>SJRPP - Quick Lime Silo |                                      |                                                |
| 2. Emissions Unit Identification Number : 052<br>[ ] No Corresponding ID [ ] Unknown        |                                      |                                                |
| 3. Emissions Unit Status<br>Code : A                                                        | 4. Acid Rain Unit?<br>[ ] Yes [X] No | 5. Emissions Unit Major<br>Group SIC Code : 49 |
| 6. Emissions Unit Comment :<br><br>Emissions Unit consists of the Quick Lime Silo.          |                                      |                                                |

**Emissions Unit Information Section**      9

SJRPP - Quick Lime Silo

**Emissions Unit Control Equipment**      1

|                                     |    |
|-------------------------------------|----|
| 1. Description :<br>Quick Lime Silo |    |
| 2. Control Device or Method Code :  | 18 |

III. Part 3 - 1

**C. EMISSIONS UNIT DETAIL INFORMATION**  
(Regulated Emissions Units Only)

**Emissions Unit Information Section**

9

SJRPP - Quick Lime Silo

**Emissions Unit Details**

|                                       |                    |  |
|---------------------------------------|--------------------|--|
| 1. Initial Startup Date :             | 01-Aug-1986        |  |
| 2. Long-term Reserve Shutdown Date :  |                    |  |
| 3. Package Unit :                     |                    |  |
| Manufacturer :                        | Model Number :     |  |
| 4. Generator Nameplate Rating :       | MW                 |  |
| 5. Incinerator Information :          |                    |  |
| Dwell Temperature :                   | Degrees Fahrenheit |  |
| Dwell Time :                          | Seconds            |  |
| Incinerator Afterburner Temperature : | Degrees Fahrenheit |  |

**Emissions Unit Operating Capacity**

|                                         |          |               |
|-----------------------------------------|----------|---------------|
| 1. Maximum Heat Input Rate :            | mmBtu/hr |               |
| 2. Maximum Incinerator Rate :           | lb/hr    | tons/day      |
| 3. Maximum Process or Throughput Rate : | 400      | tons per hour |
| 4. Maximum Production Rate :            |          |               |
| 5. Operating Capacity Comment :         |          |               |

**Emissions Unit Operating Schedule**

|                                        |                  |
|----------------------------------------|------------------|
| Requested Maximum Operating Schedule : |                  |
| 24 hours/day                           | 7 days/week      |
| 52 weeks/year                          | 8,760 hours/year |

**D. EMISSIONS UNIT REGULATIONS**  
**(Regulated Emissions Units Only)**

**Emissions Unit Information Section**      9

SJRPP - Quick Lime Silo

**Rule Applicability Analysis**

Unit was subject to PSD Review including the application of BACT.

III. Part 6a - 1

DEP Form No. 62-210.900(1) - Form  
Effective : 3-21-96

**List of Applicable Regulations**

Rule 62-204.800(7)(e), F.A.C., Adoption of the NSPS Appendices (As Noted)

Rule 62-210.300(5), F.A.C., Notification of Start-up

Jacksonville Environmental Protection Board, Rule 2 - Air Pollution (as noted)

Rule 2.105, Maintenance of Air Pollution Control Devices

Rule 2.301, Adoption of Chapter 62-210, F.A.C., (As Noted)

Rule 2.1101, Adoption of Chapter 62-297, F.A.C., (As Noted)

Rule 62-210.300(1), F.A.C., Air Construction Permits

Rule 62-210.550, F.A.C., Stack Height Policy

Rule 62-210.650, F.A.C., Circumvention

Rule 62-297.310, F.A.C., General Test Requirements

Rule 62-297.401(5) & (9), F.A.C., EPA Methods 5 and 9

Rule 62-210.700(1), (4), & (6), F.A.C., Excess Emissions

III. Part 6b - 1

DEP Form No. 62-210.900(1) - Form  
Effective : 3-21-96

## E. EMISSION POINT (STACK/VENT) INFORMATION

Emissions Unit Information Section 9

SJRPP - Quick Lime Silo

Emission Point Description and Type :

|                                                                                                                            |                                           |
|----------------------------------------------------------------------------------------------------------------------------|-------------------------------------------|
| 1. Identification of Point on Plot Plan or Flow Diagram :                                                                  | EU052                                     |
| 2. Emission Point Type Code :                                                                                              | 1                                         |
| 3. Descriptions of Emission Points Comprising this Emissions Unit for VE Tracking :<br>(limit to 100 characters per point) |                                           |
| 4. ID Numbers or Descriptions of Emission Units with this Emission Point in Common :                                       | QLS-01                                    |
| 5. Discharge Type Code :                                                                                                   | H                                         |
| 6. Stack Height :                                                                                                          | 105 feet                                  |
| 7. Exit Diameter :                                                                                                         | 0.5 feet                                  |
| 8. Exit Temperature :                                                                                                      | 68 °F                                     |
| 9. Actual Volumetric Flow Rate :                                                                                           | 980 acfm                                  |
| 10. Percent Water Vapor :                                                                                                  | 0.50 %                                    |
| 11. Maximum Dry Standard Flow Rate :                                                                                       | 980 dscfm                                 |
| 12. Nonstack Emission Point Height :                                                                                       | 0 feet                                    |
| 13. Emission Point UTM Coordinates :                                                                                       |                                           |
| Zone : 17                                                                                                                  | East (km) : 447.510 North (km) : 3366.438 |
| 14. Emission Point Comment :                                                                                               |                                           |

III. Part 7a - 1



## F. SEGMENT (PROCESS/FUEL) INFORMATION

Emissions Unit Information Section 9

SJRPP - Quick Lime Silo

Segment Description and Rate : Segment 1

|                                                                                                     |                                       |
|-----------------------------------------------------------------------------------------------------|---------------------------------------|
| 1. Segment Description (Process/Fuel Type and Associated Operating Method/Mode) :<br><br>Quick Lime |                                       |
| 2. Source Classification Code (SCC) : 30501222                                                      |                                       |
| 3. SCC Units : Tons Transferred Or Handled                                                          |                                       |
| 4. Maximum Hourly Rate : 400.00                                                                     | 5. Maximum Annual Rate : 2,600,000.00 |
| 6. Estimated Annual Activity Factor : 0.00                                                          |                                       |
| 7. Maximum Percent Sulfur :                                                                         | 8. Maximum Percent Ash :              |
| 9. Million Btu per SCC Unit :                                                                       |                                       |
| 10. Segment Comment :                                                                               |                                       |

III. Part 8 - 1

**G. EMISSIONS UNIT POLLUTANTS**  
**(Regulated and Unregulated Emissions Units)**

**Emissions Unit Information Section**      9

SJRPP - Quick Lime Silo

| 1. Pollutant Emitted | 2. Primary Control Device Code | 3. Secondary Control Device Code | 4. Pollutant Regulatory Code |
|----------------------|--------------------------------|----------------------------------|------------------------------|
| 1 - PM               | 018                            |                                  | EL                           |
| 2 - PM10             | 018                            |                                  | EL                           |

III. Part 9a - 1

DEP Form No. 62-210.900(1) - Form  
Effective : 3-21-96

**H. EMISSIONS UNIT POLLUTANT DETAIL INFORMATION**  
**(Regulated Emissions Units Only - Emissions Limited Pollutants Only)**

**Emissions Unit Information Section**      9

SJRPP - Quick Lime Silo

**Pollutant Potential/Estimated Emissions :**      Pollutant      1

|                                                                                                                                                                  |                   |                     |
|------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------|---------------------|
| 1. Pollutant Emitted : <b>PM</b>                                                                                                                                 |                   |                     |
| 2. Total Percent Efficiency of Control :                                                                                                                         | 99.50             | %                   |
| 3. Potential Emissions :                                                                                                                                         | 0.0230000 lb/hour | 0.0990000 tons/year |
| 4. Synthetically Limited?<br>[   ] Yes                    [X ] No                                                                                                |                   |                     |
| 5. Range of Estimated Fugitive/Other Emissions:<br><div style="text-align: right; margin-right: 100px;">to</div> <div style="text-align: right;">tons/year</div> |                   |                     |
| 6. Emissions Factor                                                                                                                                              | 0                 | Units lb/ton        |
| Reference    AP-42, (EF=0.27)                                                                                                                                    |                   |                     |
| 7. Emissions Method Code :      3                                                                                                                                |                   |                     |
| 8. Calculations of Emissions :<br><br>See Attachment EU052-05                                                                                                    |                   |                     |
| 9. Pollutant Potential/Estimated Emissions Comment :                                                                                                             |                   |                     |

**H. EMISSIONS UNIT POLLUTANT DETAIL INFORMATION**  
**(Regulated Emissions Units Only - Emissions Limited Pollutants Only)**

**Emissions Unit Information Section**      9

SJRPP - Quick Lime Silo

**Pollutant Potential/Estimated Emissions :**      Pollutant      2

|                                                                                                                                                                  |                   |                     |
|------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------|---------------------|
| 1. Pollutant Emitted : <b>PM10</b>                                                                                                                               |                   |                     |
| 2. Total Percent Efficiency of Control :                                                                                                                         | 99.50             | %                   |
| 3. Potential Emissions :                                                                                                                                         | 0.0230000 lb/hour | 0.0990000 tons/year |
| 4. Synthetically Limited?<br>[   ] Yes                    [X ] No                                                                                                |                   |                     |
| 5. Range of Estimated Fugitive/Other Emissions:<br><div style="text-align: right; margin-right: 100px;">to</div> <div style="text-align: right;">tons/year</div> |                   |                     |
| 6. Emissions Factor                                                                                                                                              | 0                 | Units lb/ton        |
| Reference    AP-42, (EF=0.27)                                                                                                                                    |                   |                     |
| 7. Emissions Method Code :      3                                                                                                                                |                   |                     |
| 8. Calculations of Emissions :<br><br>See Attachment EU052-05                                                                                                    |                   |                     |
| 9. Pollutant Potential/Estimated Emissions Comment :                                                                                                             |                   |                     |

III. Part 9b - 2

**Emissions Unit Information Section**      9  
SJRPP - Quick Lime Silo

**Pollutant Information Section**      1

**Allowable Emissions**      1

|                                                                                     |                                                                                                    |                 |                |
|-------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------|-----------------|----------------|
| 1. Basis for Allowable Emissions Code :                                             | OTHER                                                                                              |                 |                |
| 2. Future Effective Date of Allowable Emissions :                                   | 01-Aug-1999                                                                                        |                 |                |
| 3. Requested Allowable Emissions and Units :                                        | 5.00                                                                                               | Percent Opacity |                |
| 4. Equivalent Allowable Emissions :                                                 | 0.02                                                                                               | lb/hour         | 0.10 tons/year |
| 5. Method of Compliance :                                                           | Stack Test Waiver Requested Rule 62-297.310(7)(c), F.A.C.                                          |                 |                |
| 6. Pollutant Allowable Emissions Comment (Desc. of Related Operating Method/Mode) : | Updated BACT revised from 10% opacity to a requested no visible emissions limitation (5% Opacity). |                 |                |

**Emissions Unit Information Section**      9  
SJRPP - Quick Lime Silo

**Pollutant Information Section**      2

**Allowable Emissions**      1

|                                                                                     |                                                                                                    |                 |                |
|-------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------|-----------------|----------------|
| 1. Basis for Allowable Emissions Code :                                             | OTHER                                                                                              |                 |                |
| 2. Future Effective Date of Allowable Emissions :                                   | 01-Aug-1999                                                                                        |                 |                |
| 3. Requested Allowable Emissions and Units :                                        | 5.00                                                                                               | Percent Opacity |                |
| 4. Equivalent Allowable Emissions :                                                 | 0.02                                                                                               | lb/hour         | 0.10 tons/year |
| 5. Method of Compliance :                                                           | Stack Test Waiver Requested Rule 62-297.310(7)(c), F.A.C.                                          |                 |                |
| 6. Pollutant Allowable Emissions Comment (Desc. of Related Operating Method/Mode) : | Updated BACT revised from 10% opacity to a requested no visible emissions limitation (5% Opacity). |                 |                |

**I. VISIBLE EMISSIONS INFORMATION**  
**(Regulated Emissions Units Only)**

**Emissions Unit Information Section**      9    
SJRPP - Quick Lime Silo

**Visible Emissions Limitation :** Visible Emissions Limitation      1  

|                                                                                                                                                                                                                                                       |
|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 1. Visible Emissions Subtype :            05                                                                                                                                                                                                          |
| 2. Basis for Allowable Opacity :        OTHER                                                                                                                                                                                                         |
| 3. Requested Allowable Opacity :<br><div style="text-align: right; margin-top: 10px;">Normal Conditions :        5            %<br/>Exceptional Conditions :    100        %<br/>Maximum Period of Excess Opacity Allowed :            min/hour</div> |
| 4. Method of Compliance :<br><br>EPA Method 9                                                                                                                                                                                                         |
| 5. Visible Emissions Comment :<br><br>Updated BACT revised from 10% opacity to a requested no visible emissions limitation (5% Opacity).<br><br>Excess Emissions - 2 hours in any 24-hour period                                                      |

III. Part 10 - 1

**J. CONTINUOUS MONITOR INFORMATION**  
**(Regulated Emissions Units Only)**

**Emissions Unit Information Section**

III. Part 11 - 1

DEP Form No. 62-210.900(1) - Form  
Effective : 3-21-96



## K. PREVENTION OF SIGNIFICANT DETERIORATION (PSD) INCREMENT TRACKING INFORMATION

Emissions Unit Information Section 9

SJRPP - Quick Lime Silo

### PSD Increment Consumption Determination

#### 1. Increment Consuming for Particulate Matter or Sulfur Dioxide?

- ☐ The emissions unit is undergoing PSD review as part of this application, or has undergone PSD review previously, for particulate matter or sulfur dioxide. If so, emissions unit consumes increment.
- ☐ The facility addressed in this application is classified as an EPA major source pursuant to paragraph (c) of the definition of "major source of air pollution" in Chapter 62-213, F.A.C., and the emissions unit addressed in this section commenced (or will commence) construction after January 6, 1975. If so, baseline emissions are zero, and emissions unit consumes increment.
- ☐ The facility addressed in this application is classified as an EPA major source, and the emissions unit began initial operation after January 6, 1975, but before December 27, 1977. If so, baseline emissions are zero, and emissions unit consumes increment.
- ☒ For any facility, the emissions unit began (or will begin) initial operation after December 27, 1977. If so, baseline emissions are zero, and emissions unit consumes increment.
- ☐ None of the above apply. If so, the baseline emissions of the emissions unit are nonzero. In such case, additional analysis, beyond the scope of this application, is needed to determine whether changes in emissions have occurred (or will occur) after the baseline date that may consume or expand increment.

## 2. Increment Consuming for Nitrogen Dioxide?

- ☐ The emissions unit addressed in this section is undergoing PSD review as part of this application, or has undergone PSD review previously, for nitrogen dioxide. If so, emissions unit consumes increment.
- ☐ The facility addressed in this application is classified as an EPA major source pursuant to paragraph (c) of the definition of "major source of air pollution" in Chapter 62-213, F.A.C., and the emissions unit addressed in this section commenced (or will commence) construction after February 8, 1988. If so, baseline emissions are zero, and emissions unit consumes increment.
- ☐ The facility addressed in this application is classified as an EPA major source, and the emissions unit began initial operation after February 8, 1988, but before March 28, 1988. If so, baseline emissions are zero, and emissions unit consumes increment.
- ☐ For any facility, the emissions unit began (or will begin) initial operation after March 28, 1988. If so, baseline emissions are zero, and emissions unit consumes increment.
- ☐ None of the above apply. If so, baseline emissions of the emissions unit are nonzero. In such case, additional analysis, beyond the scope of this application, is needed to determine whether changes in emissions have occurred (or will occur) after the baseline date that may consume or expand increment.

### 3. Increment Consuming/Expanding Code :

PM : C

SO2 : U

NO2 : U

### 4. Baseline Emissions :

PM : 0.0000 lb/hour

SO2 : lb/hour

NO2 :

0.0000 tons/year

tons/year

tons/year

### 5. PSD Comment :

## III. Part 12 - 2

## L. EMISSIONS UNIT SUPPLEMENTAL INFORMATION

Emissions Unit Information Section 9

SJRPP - Quick Lime Silo

### Supplemental Requirements for All Applications

|                                                                   |          |
|-------------------------------------------------------------------|----------|
| 1. Process Flow Diagram :                                         | EU052-01 |
| 2. Fuel Analysis or Specification :                               | NA       |
| 3. Detailed Description of Control Equipment :                    | EU052-02 |
| 4. Description of Stack Sampling Facilities :                     | EU052-03 |
| 5. Compliance Test Report :                                       | EU052-04 |
| 6. Procedures for Startup and Shutdown :                          | NA       |
| 7. Operation and Maintenance Plan :                               | NA       |
| 8. Supplemental Information for Construction Permit Application : | EU052-05 |
| 9. Other Information Required by Rule or Statue :                 | NA       |

### Additional Supplemental Requirements for Category I Applications Only

|                                                          |
|----------------------------------------------------------|
| 10. Alternative Methods of Operations :                  |
| 11. Alternative Modes of Operation (Emissions Trading) : |

III. Part 13 - 1

12. Identification of Additional Applicable Requirements :

13. Compliance Assurance Monitoring  
Plan :

14. Acid Rain Application (Hard-copy Required) :

Acid Rain Part - Phase II (Form No. 62-210.900(1)(a))

Repowering Extension Plan (Form No. 62-210.900(1)(a)1.)

New Unit Exemption (Form No. 62-210.900(1)(a)2.)

Retired Unit Exemption (Form No. 62-210.900(1)(a)3.)

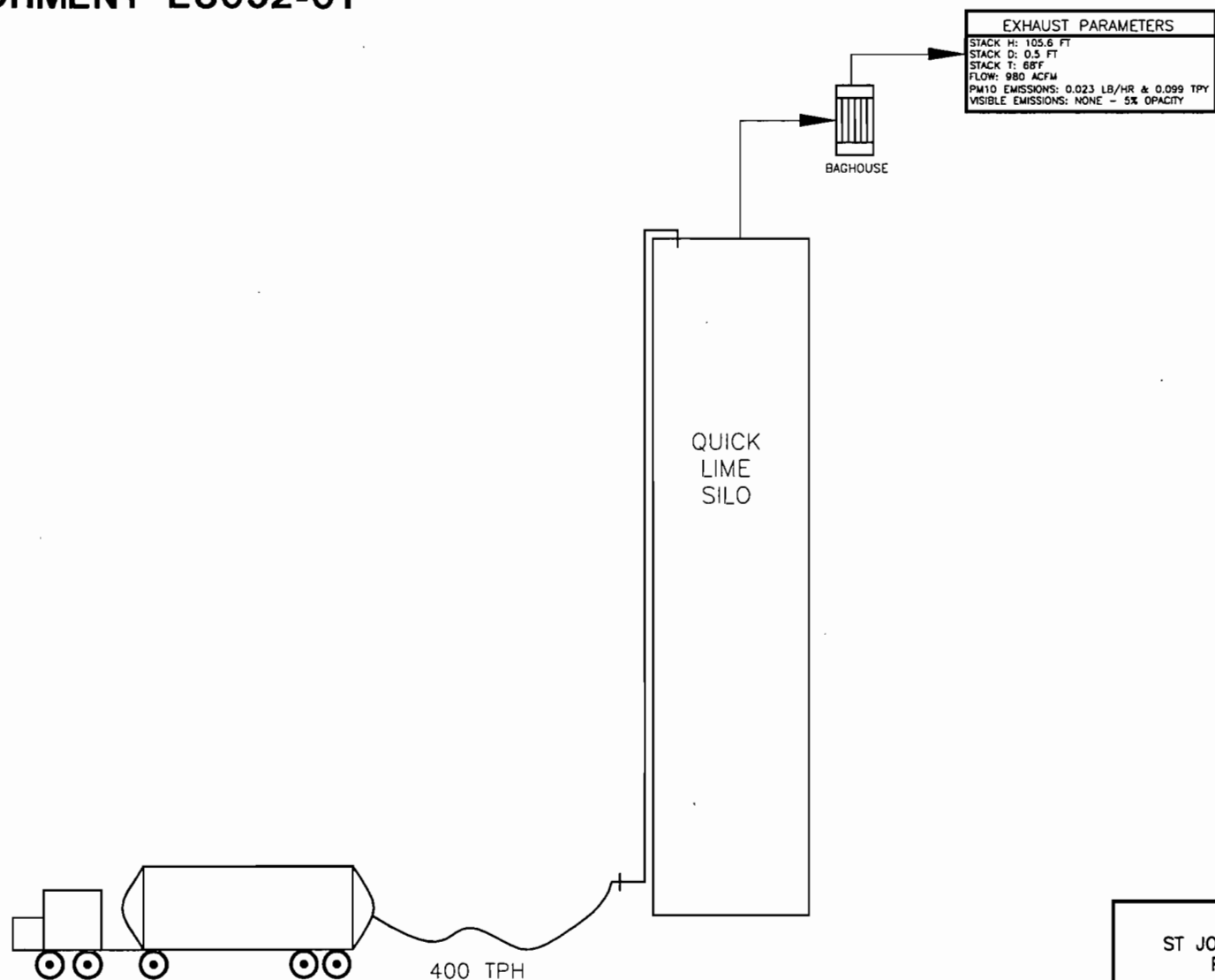
**EMISSIONS UNIT EU052**  
**Quick Lime Silo (QLS-1)**

**ATTACHMENT EU052-01**  
**Process Flow Diagram**

# ST JOHNS RIVER POWER PARK

## QUICK LIME SILO

### ATTACHMENT EU052-01



|                                                          |              |                             |  |
|----------------------------------------------------------|--------------|-----------------------------|--|
| <b>JEA</b>                                               |              |                             |  |
| ST JOHNS RIVER POWER PARK<br>PSD PERMIT UPDATE           |              |                             |  |
| Simplified Process Flow Diagram<br>Emissions Unit ID 052 |              |                             |  |
| <b>F</b> FOSTER WHEELER ENVIRONMENTAL CORPORATION        |              |                             |  |
| SCALE N/A                                                | PREPARED DJG | CAD FILE NO.<br>EU052PF.DWG |  |
| DATE: 02/16/99                                           | CHECKED MAE  | FIGURE NO.<br>EU052-01      |  |
|                                                          | APPROVED DJF |                             |  |

**EMISSIONS UNIT EU052**  
**Quick Lime Silo (QLS-1)**

**ATTACHMENT EU052-02**  
**Control Equipment Description**

**Emissions Unit EU052**  
**JRPP - Quick Lime Silo**  
**Control Equipment Description**

**Control Equipment**

**Fabric Filter/Baghouse - Existing Equipment**

**Exhaust Parameters**

**Stack Height: 105.6 feet; Stack Diameter: 6 inches; Stack Exhaust Temperature: Ambient; and Stack Flows 980 ACFM per stack**

**Reasonable Assurances**

**Emission Limitation - No Visible Emissions (5% Opacity)**

**See Attachment EU052-04, Compliance Test Report**



**EMISSIONS UNIT EU052**  
**Quick Lime Silo (QLS-1)**

**ATTACHMENT EU052-03**  
**Stack Sampling Facilities Description**

## **STACK SAMPLING FACILITIES DESCRIPTION**

Pursuant to Rule 62-297.310(6), F.A.C. JEA will ensure that the required stack sampling facilities include sampling ports (Rule 62-297.310(6)(c), F.A.C.), work platforms (Rule 62-297.310(6)(d), F.A.C.), access to work platforms (Rule 62-297.310(6)(e), F.A.C.), electrical power (Rule 62-297.310(6)(f), F.A.C.), and sampling equipment support (Rule 62-297.310(6)(g), F.A.C.). All stack sampling facilities will meet any Occupational Safety and Health Administration (OSHA) Safety and Health Standards described in 29 CFR Part 1910, Subparts D and E.

In accordance with Rule 62-297.310(6)(b), F.A.C., JEA will use temporary stack sampling facilities for the existing units which are not required to conduct a compliance test on at least an annual basis may use. When electing to use temporary sampling facilities on an emissions unit, and the Department elects to test the unit, JEA will install the temporary facilities on the emissions unit within 5 days of a request by the Department. The temporary sampling facilities will remain on the emissions unit until the test is completed.

**EMISSIONS UNIT EU052**  
**Quick Lime Silo (QLS-1)**

**ATTACHMENT EU052-04**  
**Compliance Test Report**

EPA

## VISIBLE EMISSION OBSERVATION FORM 1

Method Used (Circle One)  
 Method 9 203A 203B Other: \_\_\_\_\_

Company Name  
 St. Johns River Power Park.  
 Facility Name  
 St. Johns River Power Park.  
 Street Address  
 11201 New Berlin Rd.  
 City  
 Jacksonville State  
 FL Zip  
 32226

Process  
 Quick lime silo Unit #  
 COM Operating Mode  
 16 TPH.  
 Control Equipment  
 BASHOUSE Operating Mode  
 100% CAP.

Describe Emission Point  
 BASHOUSE Effluent on top of Quick lime silo.

Height of Emiss. Pt.  
 Start 87' End 87' Height of Emiss. Pt. Rel. to Observer  
 Start 84' End 84'  
 Distance to Emiss. Pt.  
 Start 150 End 150 Direction to Emiss. Pt. (Degrees)  
 Start 314° End 314°

Vertical Angle to Obs. Pt.  
 Start 30° End 30° Direction to Obs. Pt. (Degrees)  
 Start 314° End 314°  
 Distance and Direction to Observation Point from Emission Point  
 Start S'-180° End S'-180°

Describe Emissions  
 Start none End none  
 Emission Color  
 Start none End none Water Droplet Plume  
 Attached ☐ Detached ☐ None ☒

Describe Plume Background  
 Start OPEN SKY End OPEN SKY.  
 Background Color  
 Start GRAY End GRAY Sky Conditions  
 Start cloudy End cloudy.  
 Wind Speed  
 Start 0-5 End 0-5 Wind Direction  
 Start NE End NE  
 Ambient Temp.  
 Start 68°F End 68°F Wet Bulb Temp.  
 65°F RH Percent  
 85%

Source Layout Sketch

Draw North Arrow  
☐ TN ☐ MN

Observer's Name (Print) Alvaro Castro

Observer's Signature Alvaro Castro Date 4/29/99

Organization St. Johns River Power Park

Confirmed by Eastern Technical Associates Date 12/2/98

Additional Information

Form Number 0 5 2 1 Page 1 of 2  
 Continued on VEO Form Number 0 5 2 2

| Observation Date |   | Time Zone |    |    | Start Time | End Time |
|------------------|---|-----------|----|----|------------|----------|
| 4/29/99          |   |           |    |    | 0945       | 1045     |
| Sec<br>Min       | 0 | 15        | 30 | 45 | Comments   |          |
| 1                | 0 | 0         | 0  | 0  |            |          |
| 2                | 0 | 0         | 0  | 0  |            |          |
| 3                | 0 | 0         | 0  | 0  |            |          |
| 4                | 0 | 0         | 0  | 0  |            |          |
| 5                | 0 | 0         | 0  | 0  |            |          |
| 6                | 0 | 0         | 0  | 0  |            |          |
| 7                | 0 | 0         | 0  | 0  |            |          |
| 8                | 0 | 0         | 0  | 0  |            |          |
| 9                | 0 | 0         | 0  | 0  |            |          |
| 10               | 0 | 0         | 0  | 0  |            |          |
| 11               | 0 | 0         | 0  | 0  |            |          |
| 12               | 0 | 0         | 0  | 0  |            |          |
| 13               | 0 | 0         | 0  | 0  |            |          |
| 14               | 0 | 0         | 0  | 0  |            |          |
| 15               | 0 | 0         | 0  | 0  |            |          |
| 16               | 0 | 0         | 0  | 0  |            |          |
| 17               | 0 | 0         | 0  | 0  |            |          |
| 18               | 0 | 0         | 0  | 0  |            |          |
| 19               | 0 | 0         | 0  | 0  |            |          |
| 20               | 0 | 0         | 0  | 0  |            |          |
| 21               | 0 | 0         | 0  | 0  |            |          |
| 22               | 0 | 0         | 0  | 0  |            |          |
| 23               | 0 | 0         | 0  | 0  |            |          |
| 24               | 0 | 0         | 0  | 0  |            |          |
| 25               | 0 | 0         | 0  | 0  |            |          |
| 26               | 0 | 0         | 0  | 0  |            |          |
| 27               | 0 | 0         | 0  | 0  |            |          |
| 28               | 0 | 0         | 0  | 0  |            |          |
| 29               | 0 | 0         | 0  | 0  |            |          |
| 30               | 0 | 0         | 0  | 0  |            |          |

EPA

## VISIBLE EMISSION OBSERVATION FORM 1

Method Used (Circle One) Method 9 203A 203B Other: \_\_\_\_\_

Company Name St. Johns River Power Park.  
 Facility Name St. Johns River Power Park.  
 Street Address 11201 New Berlin Rd.  
 City Jacksonville State FL Zip 32226

Process Quia line site Unit # Com. Operating Mode 16 TPH.  
 Control Equipment BAG HOUSE Operating Mode 100% CAP

Describe Emission Point  
 Height of Emiss. Pt. Start \_\_\_\_\_ End \_\_\_\_\_ Height of Emiss. Pt. Rel. to Observer Start \_\_\_\_\_ End \_\_\_\_\_  
 Distance to Emiss. Pt. Start \_\_\_\_\_ End \_\_\_\_\_ Direction to Emiss. Pt. (Degrees) Start \_\_\_\_\_ End \_\_\_\_\_

Vertical Angle to Obs. Pt. Start \_\_\_\_\_ End \_\_\_\_\_ Direction to Obs. Pt. (Degrees) Start \_\_\_\_\_ End \_\_\_\_\_  
 Distance and Direction to Observation Point from Emission Point Start \_\_\_\_\_ End \_\_\_\_\_

Describe Emissions  
 Start \_\_\_\_\_ End \_\_\_\_\_ Emission Color \_\_\_\_\_ Water Droplet Plume  
 Start \_\_\_\_\_ End \_\_\_\_\_ Attached ☐ Detached ☐ None ☐

Describe Plume Background  
 Start \_\_\_\_\_ End \_\_\_\_\_ Background Color \_\_\_\_\_ Sky Conditions  
 Start \_\_\_\_\_ End \_\_\_\_\_ Wind Speed \_\_\_\_\_ Wind Direction  
 Start \_\_\_\_\_ End \_\_\_\_\_ Ambient Temp. \_\_\_\_\_ Wet Bulb Temp. \_\_\_\_\_ RH Percent  
 Start \_\_\_\_\_ End \_\_\_\_\_

Source Layout Sketch

Draw North Arrow ☐ TN ☐ MN

Observer's Position

Observation Point

Sun Location Line

140°

Stack With Plume

Sun

Wind

Longitude \_\_\_\_\_ Latitude \_\_\_\_\_ Declination \_\_\_\_\_

Additional Information

Form Number 0522 Page 2 of 2  
 Continued on VEO Form Number 0521

| Sec<br>Min | 0 | 15 | 30 | 45 | Comments |
|------------|---|----|----|----|----------|
| 1          | 0 | 0  | 0  | 0  |          |
| 2          | 0 | 0  | 0  | 0  |          |
| 3          | 0 | 0  | 0  | 0  |          |
| 4          | 0 | 0  | 0  | 0  |          |
| 5          | 0 | 0  | 0  | 0  |          |
| 6          | 0 | 0  | 0  | 0  |          |
| 7          | 0 | 0  | 0  | 0  |          |
| 8          | 0 | 0  | 0  | 0  |          |
| 9          | 0 | 0  | 0  | 0  |          |
| 10         | 0 | 0  | 0  | 0  |          |
| 11         | 0 | 0  | 0  | 0  |          |
| 12         | 0 | 0  | 0  | 0  |          |
| 13         | 0 | 0  | 0  | 0  |          |
| 14         | 0 | 0  | 0  | 0  |          |
| 15         | 0 | 0  | 0  | 0  |          |
| 16         | 0 | 0  | 0  | 0  |          |
| 17         | 0 | 0  | 0  | 0  |          |
| 18         | 0 | 0  | 0  | 0  |          |
| 19         | 0 | 0  | 0  | 0  |          |
| 20         | 0 | 0  | 0  | 0  |          |
| 21         | 0 | 0  | 0  | 0  |          |
| 22         | 0 | 0  | 0  | 0  |          |
| 23         | 0 | 0  | 0  | 0  |          |
| 24         | 0 | 0  | 0  | 0  |          |
| 25         | 0 | 0  | 0  | 0  |          |
| 26         | 0 | 0  | 0  | 0  |          |
| 27         | 0 | 0  | 0  | 0  |          |
| 28         | 0 | 0  | 0  | 0  |          |
| 29         | 0 | 0  | 0  | 0  |          |
| 30         | 0 | 0  | 0  | 0  |          |

Observer's Name (Print) Alvaro Castro  
 Observer's Signature Alvaro Castro Date 4/29/99  
 Organization St. Johns River Power Park.  
 Certified by Eastern Technical Associates Date 12/2/98

**EMISSIONS UNIT EU052**  
**Quick Lime Silo (QLS-1)**

**ATTACHMENT EU052-05**  
**Emissions Estimates**

**Foster Wheeler Environmental Corporation**  
**EXCEL 7.0 Worksheet Calculation**

**By:** D. Graziani, P.E.  
**Date:** 11/3/98

**Cal. No.:** 901103DJG69  
**Project No.:** 7830.0020.0056

**Ckd. By:** Kim Evans, P.E.  
**Date:** 11/10/98

**Revision No.:** 1

**Project:** St. Johns River Power Park PSD Permit Update

**Subject:** Emissions Estimates for Pneumatic Transfer Systems

Emissions for the silos are based on a pneumatic Transfer Emission Factor of 0.27 lb/ton (Cement Transfer)

| Silo                    | Transfer Rate (TPH) | Emission Factor (lb/ton) |        |
|-------------------------|---------------------|--------------------------|--------|
| Unit 1 Non-Saleable Ash | 12.5                | 0.27                     | lb/ton |
| Unit 1 Saleable Ash 1A  | 25                  | 0.27                     | lb/ton |
| Unit 1 Saleable Ash 1B  | 25                  | 0.27                     | lb/ton |
| Unit 2 Non-Saleable Ash | 12.5                | 0.27                     | lb/ton |
| Unit 2 Saleable Ash 2A  | 25                  | 0.27                     | lb/ton |
| Unit 2 Saleable Ash 2B  | 25                  | 0.27                     | lb/ton |
| Quick Lime Silo         | 400.0               | 0.27                     | lb/ton |

**Control Efficiency (%)**      99.50%

| Silo                    | Emissions - Uncontrolled |       |       | Emissions - Controlled |       |        |
|-------------------------|--------------------------|-------|-------|------------------------|-------|--------|
|                         | lb/hr                    | tpy   | g/s   | lb/hr                  | tpy   | g/s    |
| Unit 1 Non-Saleable Ash | 3.375                    | 0.616 | 0.043 | 0.017                  | 0.074 | 0.0021 |
| Unit 1 Saleable Ash 1A  | 6.750                    | 1.232 | 0.085 | 0.034                  | 0.148 | 0.0043 |
| Unit 1 Saleable Ash 1B  | 6.750                    | 1.232 | 0.085 | 0.034                  | 0.148 | 0.0043 |
| Unit 2 Non-Saleable Ash | 3.375                    | 0.616 | 0.043 | 0.017                  | 0.074 | 0.0021 |
| Unit 2 Saleable Ash 2A  | 6.750                    | 1.232 | 0.085 | 0.034                  | 0.148 | 0.0043 |
| Unit 2 Saleable Ash 2B  | 6.750                    | 1.232 | 0.085 | 0.034                  | 0.148 | 0.0043 |
| Quick Lime Silo         | 4.500                    | 0.821 | 0.057 | 0.023                  | 0.099 | 0.0028 |

**References:**

AP42 Section 11.2 Concrete Batching  
Flows - Vendor Data

### III. EMISSIONS UNIT INFORMATION

#### A. TYPE OF EMISSIONS UNIT (Regulated and Unregulated Emissions Units)

Emissions Unit Information Section 10

SJRPP - Non-Saleable Ash Silos (U#1-A & U#2-A)

#### Type of Emissions Unit Addressed in This Section

1. Regulated or Unregulated Emissions Unit? Check one :

- ☒ [ X ] 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.

2. Single Process, Group of Processes, or Fugitive Only? 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).
- ☒ [ X ] 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.

III. Part 1 - 1

DEP Form No. 62-210.900(1) - Form

Effective : 3-21-96



**B. GENERAL EMISSIONS UNIT INFORMATION  
(Regulated and Unregulated Emissions Units)**

**Emissions Unit Description and Status**

|                                                                                                                    |                                      |                                                |
|--------------------------------------------------------------------------------------------------------------------|--------------------------------------|------------------------------------------------|
| 1. Description of Emissions Unit Addressed in This Section :<br><br>SJRPP - Non-Saleable Ash Silos (U#1-A & U#2-A) |                                      |                                                |
| 2. Emissions Unit Identification Number : 053<br>[ ] No Corresponding ID [ ] Unknown                               |                                      |                                                |
| 3. Emissions Unit Status<br>Code : A                                                                               | 4. Acid Rain Unit?<br>[ ] Yes [X] No | 5. Emissions Unit Major<br>Group SIC Code : 49 |
| 6. Emissions Unit Comment :<br><br>Unit consists of two silos and the pneumatic transfer system.                   |                                      |                                                |

**Emissions Unit Information Section**      10

SJRPP - Non-Saleable Ash Silos (U#1-A & U#2-A)

**Emissions Unit Control Equipment**      1

|                                    |    |
|------------------------------------|----|
| 1. Description :                   |    |
| Non-Saleable Ash Silo U#1-A        |    |
| 2. Control Device or Method Code : | 18 |

**Emissions Unit Information Section**      10

SJRPP - Non-Saleable Ash Silos (U#1-A & U#2-A)

**Emissions Unit Control Equipment**      2

1. Description :

Non-Saleable Ash Silo U#1-B

2. Control Device or Method Code :      18

**C. EMISSIONS UNIT DETAIL INFORMATION**  
**(Regulated Emissions Units Only)**

**Emissions Unit Information Section** 10

SJRPP - Non-Saleable Ash Silos (U#1-A & U#2-A)

**Emissions Unit Details**

|                                                                                                              |                                                     |
|--------------------------------------------------------------------------------------------------------------|-----------------------------------------------------|
| 1. Initial Startup Date :                                                                                    | 15-Dec-1986                                         |
| 2. Long-term Reserve Shutdown Date :                                                                         |                                                     |
| 3. Package Unit :<br>Manufacturer :                                                                          | Model Number :                                      |
| 4. Generator Nameplate Rating :                                                                              | MW                                                  |
| 5. Incinerator Information :<br>Dwell Temperature :<br>Dwell Time :<br>Incinerator Afterburner Temperature : | Degrees Fahrenheit<br>Seconds<br>Degrees Fahrenheit |

**Emissions Unit Operating Capacity**

|                                         |          |               |
|-----------------------------------------|----------|---------------|
| 1. Maximum Heat Input Rate :            | mmBtu/hr |               |
| 2. Maximum Incinerator Rate :           | lb/hr    | tons/day      |
| 3. Maximum Process or Throughput Rate : | 12       | tons per hour |
| 4. Maximum Production Rate :            |          |               |
| 5. Operating Capacity Comment :         |          |               |

**Emissions Unit Operating Schedule**

|                                        |                  |
|----------------------------------------|------------------|
| Requested Maximum Operating Schedule : |                  |
| 24 hours/day                           | 7 days/week      |
| 52 weeks/year                          | 8,760 hours/year |

**D. EMISSIONS UNIT REGULATIONS  
(Regulated Emissions Units Only)**

**Emissions Unit Information Section**      10  
SJRPP - Non-Saleable Ash Silos (U#1-A & U#2-A)

**Rule Applicability Analysis**

Units were subject to PSD Review including the application of BACT.

**List of Applicable Regulations**

Rule 62-204.800(7)(e), F.A.C., Adoption of the NSPS Appendices (As Noted)

Rule 62-210.300(5), F.A.C., Notification of Start-up

Jacksonville Environmental Protection Board, Rule 2 - Air Pollution (as noted)

Rule 2.105, Maintenance of Air Pollution Control Devices

Rule 2.301, Adoption of Chapter 62-210, F.A.C., (As Noted)

Rule 2.1101, Adoption of Chapter 62-297, F.A.C., (As Noted)

Rule 62-210.300(1), F.A.C., Air Construction Permits

Rule 62-210.550, F.A.C., Stack Height Policy

Rule 62-210.650, F.A.C., Circumvention

Rule 62-297.310, F.A.C., General Test Requirements

Rule 62-297.401(5) & (9), F.A.C., EPA Methods 5 and 9

Rule 62-210.700(1), (4), & (6), F.A.C., Excess Emissions

III. Part 6b - 1

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## E. EMISSION POINT (STACK/VENT) INFORMATION

Emissions Unit Information Section 10

SJRPP - Non-Saleable Ash Silos (U#1-A & U#2-A)

### Emission Point Description and Type :

|                                                                                      |               |
|--------------------------------------------------------------------------------------|---------------|
| 1. Identification of Point on Plot Plan or Flow Diagram :                            | U#1-A & U32-A |
| 2. Emission Point Type Code :                                                        | 3             |
| 3. Descriptions of Emission Points Comprising this Emissions Unit :                  | U#1-A         |
| 4. ID Numbers or Descriptions of Emission Units with this Emission Point in Common : | U#1-A         |
| 5. Discharge Type Code :                                                             | H             |
| 6. Stack Height :                                                                    | 113 feet      |
| 7. Exit Diameter :                                                                   | 1.80 feet     |
| 8. Exit Temperature :                                                                | 80 °F         |
| 9. Actual Volumetric Flow Rate :                                                     | 13,467 acfm   |
| 10. Percent Water Vapor :                                                            | 0.50 %        |
| 11. Maximum Dry Standard Flow Rate :                                                 | 13,467 dscfm  |
| 12. Nonstack Emission Point Height :                                                 | feet          |
| 13. Emission Point UTM Coordinates :                                                 |               |
| Zone :                                                                               | 17            |
| East (km) :                                                                          | 447.469       |
| North (km) :                                                                         | 3,367.010     |
| 14. Emission Point Comment :                                                         |               |

III. Part 7b - 1

DEP Form No. 62-210.900(1) - Form  
Effective : 3-21-96

## E. EMISSION POINT (STACK/VENT) INFORMATION

Emissions Unit Information Section 10

SJRPP - Non-Saleable Ash Silos (U#1-A & U#2-A)

### Emission Point Description and Type :

|                                                                                      |               |
|--------------------------------------------------------------------------------------|---------------|
| 1. Identification of Point on Plot Plan or Flow Diagram :                            | U#1-A & U32-A |
| 2. Emission Point Type Code :                                                        | 3             |
| 3. Descriptions of Emission Points Comprising this Emissions Unit :                  | U#2-A         |
| 4. ID Numbers or Descriptions of Emission Units with this Emission Point in Common : | U#1-A         |
| 5. Discharge Type Code :                                                             | H             |
| 6. Stack Height :                                                                    | 113 feet      |
| 7. Exit Diameter :                                                                   | 1.80 feet     |
| 8. Exit Temperature :                                                                | 80 °F         |
| 9. Actual Volumetric Flow Rate :                                                     | 13,467 acfm   |
| 10. Percent Water Vapor :                                                            | 0.50 %        |
| 11. Maximum Dry Standard Flow Rate :                                                 | 13,467 dscfm  |
| 12. Nonstack Emission Point Height :                                                 | feet          |
| 13. Emission Point UTM Coordinates :                                                 |               |
| Zone :                                                                               | 17            |
| East (km) :                                                                          | 447.469       |
| North (km) :                                                                         | 3,367.010     |
| 14. Emission Point Comment :                                                         |               |

III. Part 7b - 2



## F. SEGMENT (PROCESS/FUEL) INFORMATION

Emissions Unit Information Section 10

SJRPP - Non-Saleable Ash Silos (U#1-A & U#2-A)

Segment Description and Rate : Segment 1

|                                                                                                  |                                     |
|--------------------------------------------------------------------------------------------------|-------------------------------------|
| 1. Segment Description (Process/Fuel Type and Associated Operating Method/Mode) :<br><br>Fly Ash |                                     |
| 2. Source Classification Code (SCC) : 30501222                                                   |                                     |
| 3. SCC Units : Tons Transferred Or Handled                                                       |                                     |
| 4. Maximum Hourly Rate : 12.50                                                                   | 5. Maximum Annual Rate : 109,500.00 |
| 6. Estimated Annual Activity Factor : 0.00                                                       |                                     |
| 7. Maximum Percent Sulfur :                                                                      | 8. Maximum Percent Ash :            |
| 9. Million Btu per SCC Unit :                                                                    |                                     |
| 10. Segment Comment :                                                                            |                                     |

III. Part 8 - 1

DEP Form No. 62-210.900(1) - Form  
Effective : 3-21-96

**G. EMISSIONS UNIT POLLUTANTS**  
**(Regulated and Unregulated Emissions Units)**

**Emissions Unit Information Section**     10  
SJRPP - Non-Saleable Ash Silos (U#1-A & U#2-A)

| 1. Pollutant Emitted | 2. Primary Control Device Code | 3. Secondary Control Device Code | 4. Pollutant Regulatory Code |
|----------------------|--------------------------------|----------------------------------|------------------------------|
| 1 - PM               | 018                            |                                  | EL                           |
| 2 - PM10             | 018                            |                                  | EL                           |

III. Part 9a - 1

**H. EMISSIONS UNIT POLLUTANT DETAIL INFORMATION**  
**(Regulated Emissions Units Only - Emissions Limited Pollutants Only)**

**Emissions Unit Information Section**      10  
SJRPP - Non-Saleable Ash Silos (U#1-A & U#2-A)

**Pollutant Potential/Estimated Emissions :**      Pollutant      1

|                                                                                                                                                                  |                   |                     |
|------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------|---------------------|
| 1. Pollutant Emitted : <b>PM</b>                                                                                                                                 |                   |                     |
| 2. Total Percent Efficiency of Control :                                                                                                                         | 99.50             | %                   |
| 3. Potential Emissions :                                                                                                                                         | 0.0170000 lb/hour | 0.0740000 tons/year |
| 4. Synthetically Limited?<br>[   ] Yes                    [X] No                                                                                                 |                   |                     |
| 5. Range of Estimated Fugitive/Other Emissions:<br><div style="text-align: right; margin-right: 100px;">to</div> <div style="text-align: right;">tons/year</div> |                   |                     |
| 6. Emissions Factor                                                                                                                                              | 0                 | Units lb/ton        |
| Reference    AP-42, (EF=0.27)                                                                                                                                    |                   |                     |
| 7. Emissions Method Code :      3                                                                                                                                |                   |                     |
| 8. Calculations of Emissions :<br><br>See Attachment EU053-05                                                                                                    |                   |                     |
| 9. Pollutant Potential/Estimated Emissions Comment :                                                                                                             |                   |                     |

III. Part 9b - 1

|                                                                                                  |                   |                     |
|--------------------------------------------------------------------------------------------------|-------------------|---------------------|
| 1. Pollutant Emitted : <b>PM10</b>                                                               |                   |                     |
| 2. Total Percent Efficiency of Control :                                                         | 99.50             | %                   |
| 3. Potential Emissions :                                                                         | 0.0170000 lb/hour | 0.0740000 tons/year |
| 4. Synthetically Limited?<br><input type="checkbox"/> Yes <input checked="" type="checkbox"/> No |                   |                     |
| 5. Range of Estimated Fugitive/Other Emissions:                                                  |                   | tons/year           |
| 6. Emissions Factor                                                                              | 0                 | Units lb/ton        |
| Reference                                                                                        | AP-42, (EF=0.27)  |                     |
| 7. Emissions Method Code : 3                                                                     |                   |                     |
| 8. Calculations of Emissions :<br><br>See Attachment EU053-05                                    |                   |                     |
| 9. Pollutant Potential/Estimated Emissions Comment :                                             |                   |                     |

**Emissions Unit Information Section** 10  
SJRPP - Non-Saleable Ash Silos (U#1-A & U#2-A)

**Pollutant Information Section** 1

**Allowable Emissions** 1

|                                                                                     |                                                                                                    |                 |                |
|-------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------|-----------------|----------------|
| 1. Basis for Allowable Emissions Code :                                             | OTHER                                                                                              |                 |                |
| 2. Future Effective Date of Allowable Emissions :                                   | 01-Aug-1999                                                                                        |                 |                |
| 3. Requested Allowable Emissions and Units :                                        | 5.00                                                                                               | Percent Opacity |                |
| 4. Equivalent Allowable Emissions :                                                 | 0.02                                                                                               | lb/hour         | 0.07 tons/year |
| 5. Method of Compliance :                                                           | Stack Test Waiver Requested Rule 62-297.310(7)(c), F.A.C.                                          |                 |                |
| 6. Pollutant Allowable Emissions Comment (Desc. of Related Operating Method/Mode) : | Updated BACT revised from 10% opacity to a requested no visible emissions limitation (5% Opacity). |                 |                |

III. Part 9c - 1

**Emissions Unit Information Section** 10  
SJRPP - Non-Saleable Ash Silos (U#1-A & U#2-A)

**Pollutant Information Section** 2

**Allowable Emissions** 1

|                                                                                     |                                                                                                    |                 |                |
|-------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------|-----------------|----------------|
| 1. Basis for Allowable Emissions Code :                                             | OTHER                                                                                              |                 |                |
| 2. Future Effective Date of Allowable Emissions :                                   | 01-Aug-1999                                                                                        |                 |                |
| 3. Requested Allowable Emissions and Units :                                        | 5.00                                                                                               | Percent Opacity |                |
| 4. Equivalent Allowable Emissions :                                                 | 0.02                                                                                               | lb/hour         | 0.07 tons/year |
| 5. Method of Compliance :                                                           | Stack Test Waiver Requested Rule 62-297.310(7)(c), F.A.C.                                          |                 |                |
| 6. Pollutant Allowable Emissions Comment (Desc. of Related Operating Method/Mode) : | Updated BACT revised from 10% opacity to a requested no visible emissions limitation (5% Opacity). |                 |                |

III. Part 9c - 2

**I. VISIBLE EMISSIONS INFORMATION**  
**(Regulated Emissions Units Only)**

**Emissions Unit Information Section**    10  
SJRPP - Non-Saleable Ash Silos (U#1-A & U#2-A)

**Visible Emissions Limitation :** Visible Emissions Limitation    1

|                                                                                                                                                                                                                                                                                                                                                                                                                                       |
|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 1. Visible Emissions Subtype :                      05                                                                                                                                                                                                                                                                                                                                                                                |
| 2. Basis for Allowable Opacity :                      OTHER                                                                                                                                                                                                                                                                                                                                                                           |
| 3. Requested Allowable Opacity :<br><div style="text-align: right; margin-right: 50px;">Normal Conditions :                      5                      %</div> <div style="text-align: right; margin-right: 50px;">Exceptional Conditions :                      100                      %</div> <div style="text-align: right; margin-right: 50px;">Maximum Period of Excess Opacity Allowed :                      min/hour</div> |
| 4. Method of Compliance :<br><br>EPA Method 9                                                                                                                                                                                                                                                                                                                                                                                         |
| 5. Visible Emissions Comment :<br><br>Updated BACT revised from 10% opacity to a requested no visible emissions limitation (5% Opacity)..<br><br>Excess Emissions - 2 hours in any 24-hour period                                                                                                                                                                                                                                     |

III. Part 10 - 1

**J. CONTINUOUS MONITOR INFORMATION**  
**(Regulated Emissions Units Only)**

**Emissions Unit Information Section**

III. Part 11 - 1

DEP Form No. 62-210.900(1) - Form  
Effective : 3-21-96



## K. PREVENTION OF SIGNIFICANT DETERIORATION (PSD) INCREMENT TRACKING INFORMATION

Emissions Unit Information Section 10

SJRPP - Non-Saleable Ash Silos (U#1-A & U#2-A)

### PSD Increment Consumption Determination

#### 1. Increment Consuming for Particulate Matter or Sulfur Dioxide?

- ☐ The emissions unit is undergoing PSD review as part of this application, or has undergone PSD review previously, for particulate matter or sulfur dioxide. If so, emissions unit consumes increment.
- ☐ The facility addressed in this application is classified as an EPA major source pursuant to paragraph (c) of the definition of "major source of air pollution" in Chapter 62-213, F.A.C., and the emissions unit addressed in this section commenced (or will commence) construction after January 6, 1975. If so, baseline emissions are zero, and emissions unit consumes increment.
- ☐ The facility addressed in this application is classified as an EPA major source, and the emissions unit began initial operation after January 6, 1975, but before December 27, 1977. If so, baseline emissions are zero, and emissions unit consumes increment.
- ☒ For any facility, the emissions unit began (or will begin) initial operation after December 27, 1977. If so, baseline emissions are zero, and emissions unit consumes increment.
- ☐ None of the above apply. If so, the baseline emissions of the emissions unit are nonzero. In such case, additional analysis, beyond the scope of this application, is needed to determine whether changes in emissions have occurred (or will occur) after the baseline date that may consume or expand increment.

III. Part 12 - 1

## 2. Increment Consuming for Nitrogen Dioxide?

- ☐ The emissions unit addressed in this section is undergoing PSD review as part of this application, or has undergone PSD review previously, for nitrogen dioxide. If so, emissions unit consumes increment.
- ☐ The facility addressed in this application is classified as an EPA major source pursuant to paragraph (c) of the definition of "major source of air pollution" in Chapter 62-213, F.A.C., and the emissions unit addressed in this section commenced (or will commence) construction after February 8, 1988. If so, baseline emissions are zero, and emissions unit consumes increment.
- ☐ The facility addressed in this application is classified as an EPA major source, and the emissions unit began initial operation after February 8, 1988, but before March 28, 1988. If so, baseline emissions are zero, and emissions unit consumes increment.
- ☐ For any facility, the emissions unit began (or will begin) initial operation after March 28, 1988. If so, baseline emissions are zero, and emissions unit consumes increment.
- ☐ None of the above apply. If so, baseline emissions of the emissions unit are nonzero. In such case, additional analysis, beyond the scope of this application, is needed to determine whether changes in emissions have occurred (or will occur) after the baseline date that may consume or expand increment.

### 3. Increment Consuming/Expanding Code :

PM : C

SO2 : U

NO2 : U

### 4. Baseline Emissions :

PM : 0.0000 lb/hour

0.0000 tons/year

SO2 : lb/hour

tons/year

NO2 :

tons/year

### 5. PSD Comment :

## III. Part 12 - 2

DEP Form No. 62-210.900(1) - Form

Effective : 3-21-96

## L. EMISSIONS UNIT SUPPLEMENTAL INFORMATION

Emissions Unit Information Section 10

SJRPP - Non-Saleable Ash Silos (U#1-A & U#2-A)

### Supplemental Requirements for All Applications

|                                                                   |          |
|-------------------------------------------------------------------|----------|
| 1. Process Flow Diagram :                                         | EU053-01 |
| 2. Fuel Analysis or Specification :                               | NA       |
| 3. Detailed Description of Control Equipment :                    | EU053-02 |
| 4. Description of Stack Sampling Facilities :                     | EU053-03 |
| 5. Compliance Test Report :                                       | EU053-04 |
| 6. Procedures for Startup and Shutdown :                          | NA       |
| 7. Operation and Maintenance Plan :                               | NA       |
| 8. Supplemental Information for Construction Permit Application : | EU053-05 |
| 9. Other Information Required by Rule or Statute :                | NA       |

### Additional Supplemental Requirements for Category I Applications Only

|                                                          |
|----------------------------------------------------------|
| 10. Alternative Methods of Operations :                  |
| 11. Alternative Modes of Operation (Emissions Trading) : |

III. Part 13 - 1

12. Identification of Additional Applicable Requirements :

13. Compliance Assurance Monitoring  
Plan :

14. Acid Rain Application (Hard-copy Required) :

Acid Rain Part - Phase II (Form No. 62-210.900(1)(a))

Repowering Extension Plan (Form No. 62-210.900(1)(a)1.)

New Unit Exemption (Form No. 62-210.900(1)(a)2.)

Retired Unit Exemption (Form No. 62-210.900(1)(a)3.)

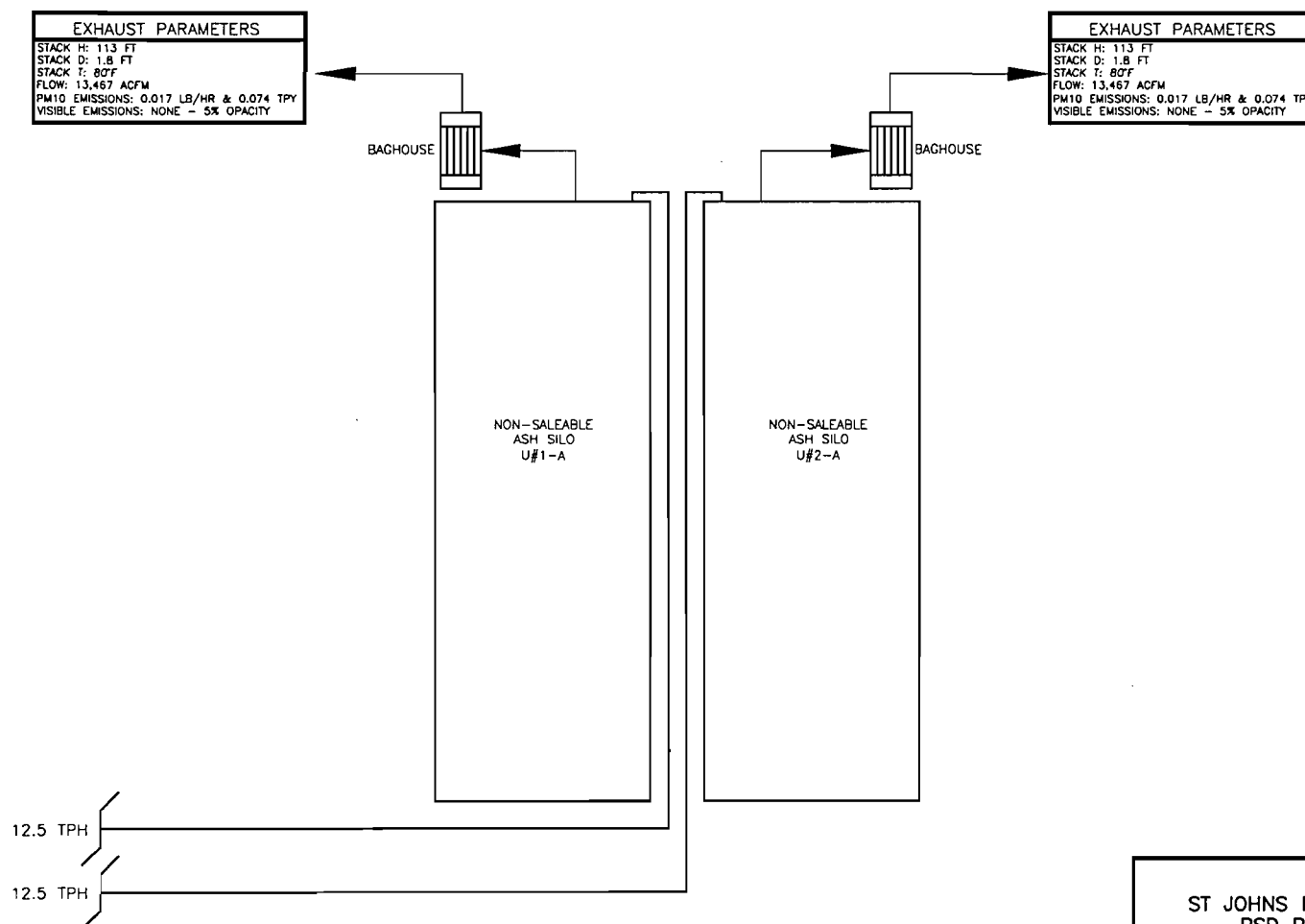
**EMISSIONS UNIT EU053**  
**Non-Saleable Ash Silos (U#1-A & U#2-A)**

**ATTACHMENT EU053-01**  
**Process Flow Diagram**

# ST JOHNS RIVER POWER PARK

## NON-SALEABLE ASH SILOS

### ATTACHMENT EU053-01



| JEA                                      |          |     |              |
|------------------------------------------|----------|-----|--------------|
| ST JOHNS RIVER POWER PARK                |          |     |              |
| PSD PERMIT UPDATE                        |          |     |              |
| Simplified Process Flow Diagram          |          |     |              |
| Emissions Unit ID 053                    |          |     |              |
| FOSTER WHEELER ENVIRONMENTAL CORPORATION |          |     |              |
| SCALE N/A                                | PREPARED | DJG | CAD FILE NO. |
|                                          | CHECKED  | MAE | EU053PF.DWG  |
| DATE: 02/16/99                           | APPROVED | DJF | FIGURE NO.   |
|                                          |          |     | EU053-01     |

**EMISSIONS UNIT EU053**  
**Non-Saleable Ash Silos (U#1-A & U#2-A)**

**ATTACHMENT EU053-02**  
**Control Equipment Description**

**Emissions Unit EU053**

**BJRPP - Non-Saleable Ash Silos (U#1-A & U#2-A)**

**Control Equipment Description**

**Control Equipment**

**Two Separate Fabric Filters/Baghouses - Existing Equipment**

**Exhaust Parameters**

**Stack Height: 113 feet; Stack Diameter: 21.6 inches; Stack Exhaust Temperature: Ambient; and Stack Flows 13,467 ACFM per stack**

**Reasonable Assurances**

**Emission Limitation - No Visible Emissions (5% Opacity)**

**See Attachment EU053-04, Compliance Test Report**



**EMISSIONS UNIT EU053**  
**Non-Saleable Ash Silos (U#1-A & U#2-A)**

**ATTACHMENT EU053-03**  
**Stack Sampling Facilities Description**

## **STACK SAMPLING FACILITIES DESCRIPTION**

Pursuant to Rule 62-297.310(6), F.A.C. JEA will ensure that the required stack sampling facilities include sampling ports (Rule 62-297.310(6)(c), F.A.C.), work platforms (Rule 62-297.310(6)(d), F.A.C.), access to work platforms (Rule 62-297.310(6)(e), F.A.C.), electrical power (Rule 62-297.310(6)(f), F.A.C.), and sampling equipment support (Rule 62-297.310(6)(g), F.A.C.). All stack sampling facilities will meet any Occupational Safety and Health Administration (OSHA) Safety and Health Standards described in 29 CFR Part 1910, Subparts D and E.

In accordance with Rule 62-297.310(6)(b), F.A.C., JEA will use temporary stack sampling facilities for the existing units which are not required to conduct a compliance test on at least an annual basis may use. When electing to use temporary sampling facilities on an emissions unit, and the Department elects to test the unit, JEA will install the temporary facilities on the emissions unit within 5 days of a request by the Department. The temporary sampling facilities will remain on the emissions unit until the test is completed.

**EMISSIONS UNIT EU053**  
**Non-Saleable Ash Silos (U#1-A & U#2-A)**

**ATTACHMENT EU053-04**  
**Compliance Test Report**

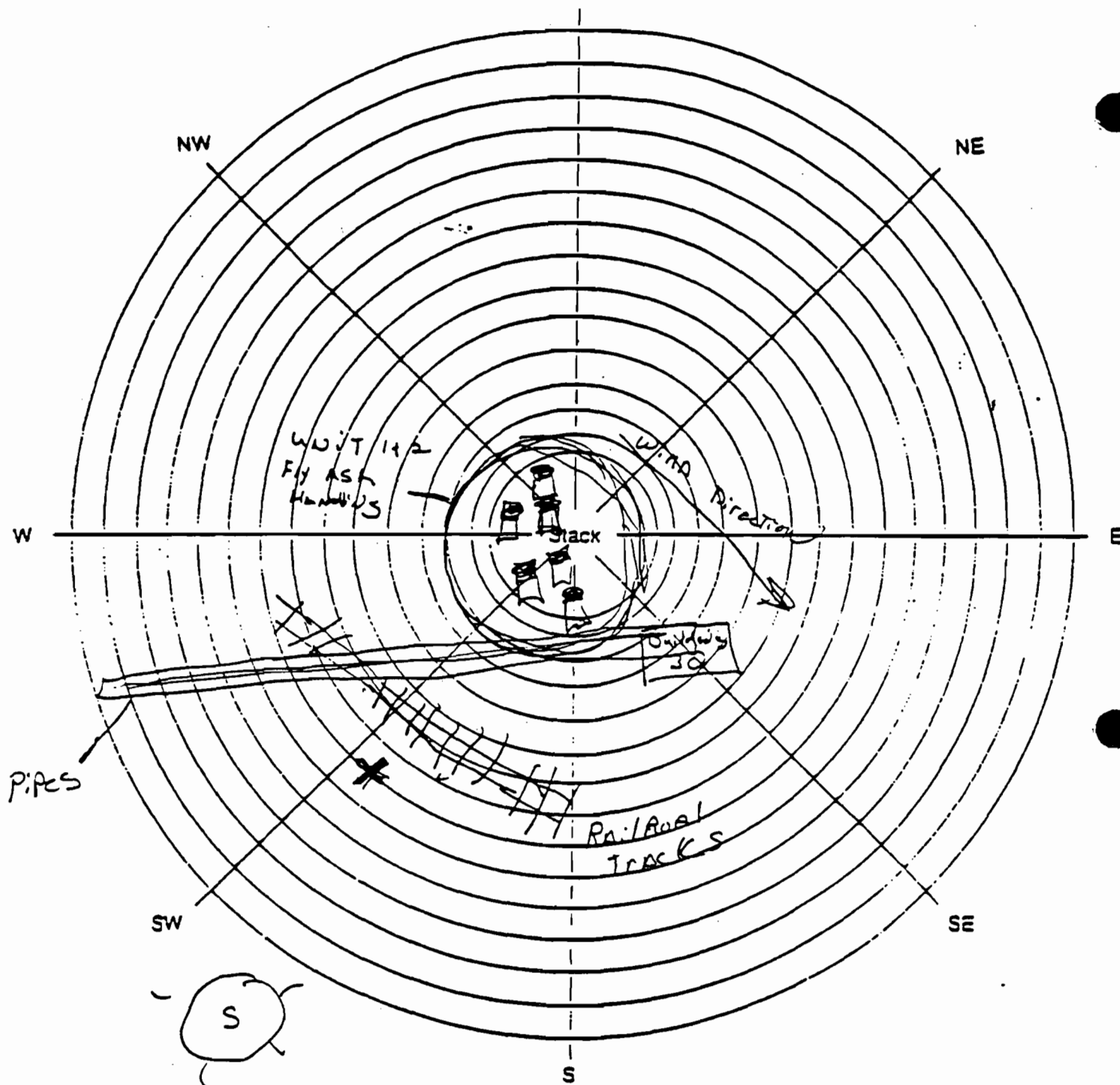
Client J.E.A. Observer John Smith  
 Project No. 97-422 Date 11-4-97  
 Plant Name SJRPP Observation began 1310  
 Location JACKSONVILLE FL ended 1411  
 Type of Facility POWER PLANT

| Source Identification<br>(Stack, Duct, etc.)         | Min. | Seconds |    |    |    | Min. | Seconds |    |    |    |
|------------------------------------------------------|------|---------|----|----|----|------|---------|----|----|----|
|                                                      |      | 0       | 15 | 30 | 45 |      | 0       | 15 | 30 | 45 |
| <u>UNIT 1+2 FLY ASH</u>                              | 0    | 0       | 0  | 0  | 0  | 30   | 0       | 0  | 0  | 0  |
| <u>HANDLING AREA</u>                                 | 1    | 0       | 0  | 0  | 0  | 31   | 0       | 0  | 0  | 0  |
|                                                      | 2    | 0       | 0  | 0  | 0  | 32   | 0       | 0  | 0  | 0  |
|                                                      | 3    | 0       | 0  | 0  | 0  | 33   | 0       | 0  | 0  | 0  |
|                                                      | 4    | 0       | 0  | 0  | 0  | 34   | 0       | 0  | 0  | 0  |
| Observer Location<br>(Diagram on back of sheet)      | 5    | 0       | 0  | 0  | 0  | 35   | 0       | 0  | 0  | 0  |
| Distance from Observer to source <u>150'</u>         | 6    | 0       | 0  | 0  | 0  | 36   | 0       | 0  | 0  | 0  |
| Height of Source (above ground) <u>0-150'</u>        | 7    | 0       | 0  | 0  | 0  | 37   | 0       | 0  | 0  | 0  |
| Weather Conditions                                   | 8    | 0       | 0  | 0  | 0  | 38   | 0       | 0  | 0  | 0  |
| Wind Direction <u>SE</u>                             | 9    | 0       | 0  | 0  | 0  | 39   | 0       | 0  | 0  | 0  |
| Wind Speed <u>0-5</u>                                | 10   | 0       | 0  | 0  | 0  | 40   | 0       | 0  | 0  | 0  |
| Temperature <u>70</u>                                | 11   | 0       | 0  | 0  | 0  | 41   | 0       | 0  | 0  | 0  |
| Position of Sun <u>SOUTH</u>                         | 12   | 0       | 0  | 0  | 0  | 42   | 0       | 0  | 0  | 0  |
| Sky Condition <u>CLEAR</u>                           | 13   | 0       | 0  | 0  | 0  | 43   | 0       | 0  | 0  | 0  |
| (clear, overcast, %clouds,<br>color of clouds, etc.) | 14   | 0       | 0  | 0  | 0  | 44   | 0       | 0  | 0  | 0  |
|                                                      | 15   | 0       | 0  | 0  | 0  | 45   | 0       | 0  | 0  | 0  |
| Plume Description                                    | 16   | 0       | 0  | 0  | 0  | 46   | 5       | 5  | 5  | 5  |
| Color <u>BROWN</u>                                   | 17   | 0       | 0  | 0  | 0  | 47   | 0       | 0  | 0  | 0  |
| Background <u>SKY</u>                                | 18   | 0       | 0  | 0  | 0  | 48   | 0       | 0  | 0  | 0  |
| Type (wet or dry) <u>Dry</u> Dist. _____             | 19   | 0       | 0  | 0  | 0  | 49   | 0       | 0  | 0  | 0  |
| Comments                                             | 20   | 0       | 0  | 0  | 0  | 50   | 0       | 0  | 0  | 0  |
|                                                      | 21   | 0       | 0  | 0  | 0  | 51   | 0       | 0  | 0  | 0  |
|                                                      | 22   | 0       | 0  | 0  | 0  | 52   | 0       | 0  | 0  | 0  |
|                                                      | 23   | 5       | 5  | 0  | 0  | 53   | 5       | 5  | 0  | 0  |
|                                                      | 24   | 5       | 5  | 5  | 5  | 54   | 0       | 0  | 0  | 0  |
|                                                      | 25   | 0       | 0  | 0  | 0  | 55   | 0       | 0  | 0  | 0  |
| Observers Signature <u>John C. Smith</u>             | 26   | 0       | 0  | 0  | 0  | 56   | 0       | 0  | 0  | 0  |
| Date of Last EPA Method 9 Examination                | 27   | 0       | 0  | 0  | 0  | 57   | 0       | 0  | 0  | 0  |
| <u>OCTOBER 1997</u>                                  | 28   | 0       | 0  | 0  | 0  | 58   | 0       | 0  | 0  | 0  |
| Examination Passed in EPA Region                     | 29   | 0       | 0  | 0  | 0  | 59   | 0       | 0  | 0  | 0  |
| <u>AKRON OH</u>                                      |      |         |    |    |    |      |         |    |    |    |

Distance (ft.) from plume outlet to point in plume where observations made



F19  
 Total Source Analysis, Inc.  
 Environmental Testing Consultants



# LOCATE THE FOLLOWING ON THE DIAGRAM

1. The stack configuration with the stack under observation in the center
2. Observer's position using X to indicate position.
3. Arrow pointing direction wind is blowing.
4. Dotted line between observer and plume indicating observers line of sight when making readings.
5. Circle with S in center to indicate sun location.
6. Any large structures or significant topographical features.

NOTE: Stack configuration is not proportional to distances in feet from stack in the diagram.



Total Source Analysis, Inc.  
Environmental Technology

Client JE A Best Available Copy  
 Project No. 97-422  
 Plant Name STRPP  
 Location JACKSONVILLE FL.  
 Facility POWER PLANT

Observer John Sutton  
 Date 11-4-97  
 Observation began CEYC  
 ended CEYC

Source Identification  
 (Stack, Duct, etc.) Fly Ash Silo (Unit 1)  
(South Side)

Observer Location  
 (Diagram on back of sheet)  
 Distance from Observer to source 260'  
 Height of Source (above ground) 150'

Weather Conditions  
 Wind Direction SE  
 Wind Speed 0-5  
 Temperature 65  
 Position of Sun SOUTH EAST  
 Sky Condition Clouds  
 (clear, overcast, clouds,  
 color of clouds, etc.)

Plume Description  
 Color white  
 Background sky  
 Type (wet or dry) Dry Dist. \_\_\_\_\_

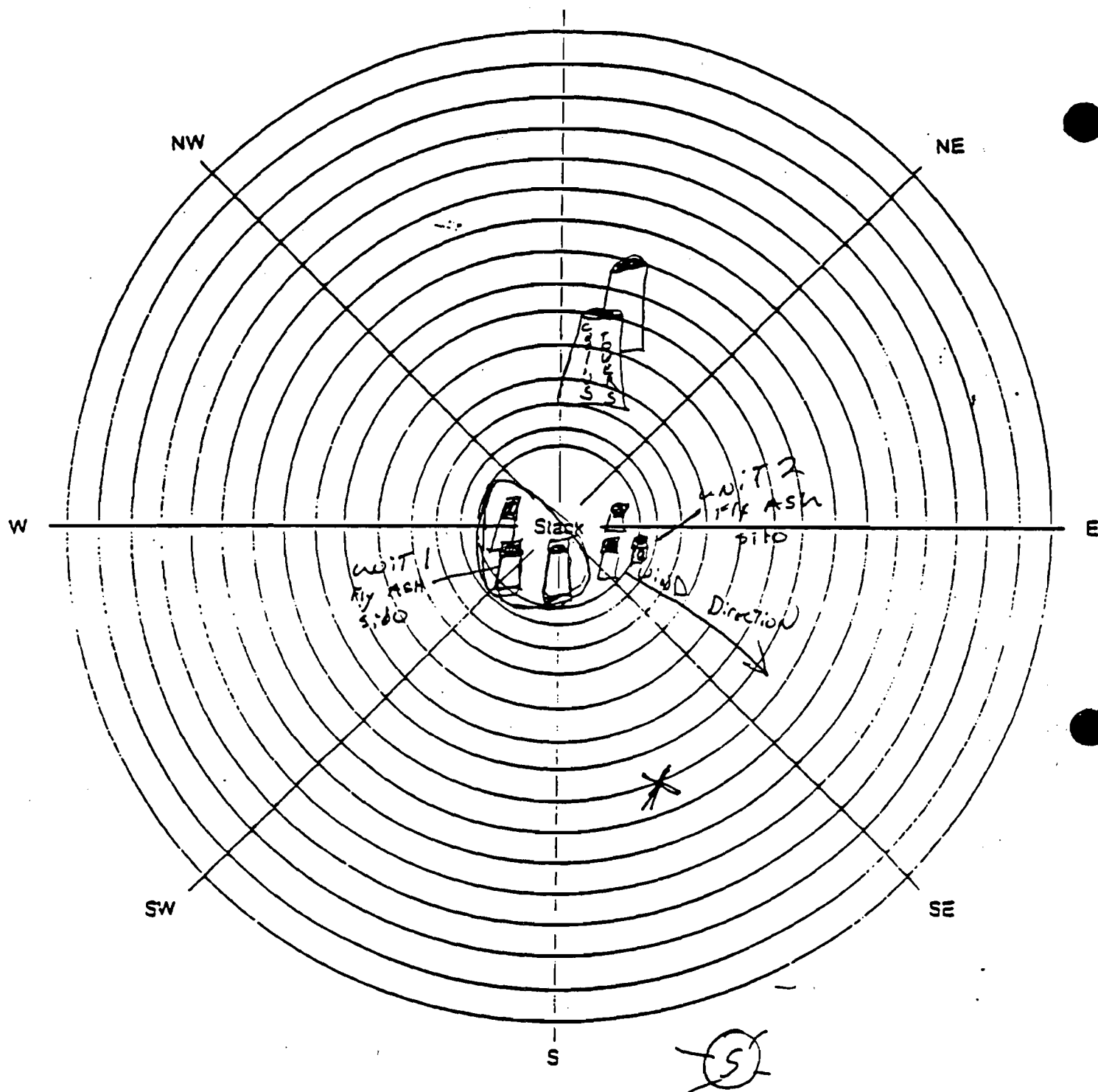
Comments \_\_\_\_\_  
 \_\_\_\_\_  
 \_\_\_\_\_  
 \_\_\_\_\_

Observer's Signature [Signature]  
 Date of Last EPA Method 9 Examination October 1997  
 Examination Passed in EPA Region \_\_\_\_\_

| Min. | Seconds |    |    |    | Min. | Seconds |    |    |    |
|------|---------|----|----|----|------|---------|----|----|----|
|      | 0       | 15 | 30 | 45 |      | 0       | 15 | 30 | 45 |
| 0    | 0       | 0  | 0  | 0  | 30   | 0       | 0  | 0  | 0  |
| 1    | 0       | 0  | 0  | 0  | 31   | 0       | 0  | 0  | 0  |
| 2    | 0       | 0  | 0  | 0  | 32   | 0       | 0  | 0  | 0  |
| 3    | 0       | 0  | 0  | 0  | 33   | 0       | 0  | 0  | 0  |
| 4    | 0       | 0  | 0  | 0  | 34   | 0       | 0  | 0  | 0  |
| 5    | 0       | 0  | 0  | 0  | 35   | 0       | 0  | 0  | 0  |
| 6    | 0       | 5  | 0  | 0  | 36   | 0       | 0  | 0  | 0  |
| 7    | 0       | 0  | 0  | 0  | 37   | 0       | 0  | 0  | 0  |
| 8    | 0       | 0  | 0  | 0  | 38   | 0       | 0  | 0  | 0  |
| 9    | 0       | 0  | 0  | 0  | 39   | 0       | 0  | 0  | 0  |
| 10   | 0       | 0  | 0  | 0  | 40   | 0       | 0  | 0  | 0  |
| 11   | 0       | 0  | 0  | 0  | 41   | 0       | 0  | 0  | 0  |
| 12   | 0       | 0  | 0  | 0  | 42   | 0       | 0  | 0  | 0  |
| 13   | 0       | 0  | 0  | 0  | 43   | 0       | 0  | 0  | 0  |
| 14   | 0       | 0  | 0  | 0  | 44   | 0       | 0  | 0  | 0  |
| 15   | 0       | 0  | 0  | 0  | 45   | 0       | 0  | 0  | 0  |
| 16   | 0       | 0  | 0  | 0  | 46   | 0       | 0  | 0  | 0  |
| 17   | 0       | 0  | 0  | 0  | 47   | 0       | 0  | 0  | 0  |
| 18   | 0       | 0  | 0  | 0  | 48   | 0       | 0  | 0  | 0  |
| 19   | 0       | 0  | 0  | 0  | 49   | 0       | 0  | 0  | 0  |
| 20   | 0       | 0  | 0  | 0  | 50   | 0       | 0  | 0  | 0  |
| 21   | 0       | 0  | 0  | 0  | 51   | 0       | 0  | 0  | 0  |
| 22   | 0       | 0  | 0  | 0  | 52   | 0       | 0  | 0  | 0  |
| 23   | 0       | 0  | 0  | 0  | 53   | 0       | 0  | 0  | 0  |
| 24   | 0       | 0  | 0  | 0  | 54   | 0       | 0  | 0  | 0  |
| 25   | 0       | 0  | 0  | 0  | 55   | 0       | 0  | 0  | 0  |
| 26   | 0       | 0  | 0  | 0  | 56   | 0       | 0  | 0  | 0  |
| 27   | 0       | 0  | 0  | 0  | 57   | 0       | 0  | 0  | 0  |
| 28   | 0       | 0  | 0  | 0  | 58   | 0       | 0  | 0  | 0  |
| 29   | 0       | 0  | 0  | 0  | 59   | 0       | 0  | 0  | 0  |



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LOCATE THE FOLLOWING ON THE DIAGRAM

1. The stack configuration with the stack under observation in the center
2. Observer's position using X to indicate position.
3. Arrow pointing direction wind is blowing.
4. Dotted line between observer and plume indicating observers line of sight when making readings.
5. Circle with S in center to indicate sun location.
6. Any large structures or significant topographical features.

NOTE: Stack configuration is not proportional to distances in feet from stack in the diagram.



Total Source Analysis, Inc.  
Environmental Testing Consultants

Client J. E. A. Best Available CopyObserver John C. SuttonProject No. 97-422Date 11.4.97Plant Name SJRPPObservation began 6:45Location JACKSONVILLE FL.ended 10:45Type of Facility POWER PLANT

| Source Identification<br>(Stack, Duct, etc.) <u>Fly Ash Silo (unit 2)</u><br><u>NORTH SIDE</u> | Min. | Seconds |    |    |    | Min. | Seconds |    |    |    |
|------------------------------------------------------------------------------------------------|------|---------|----|----|----|------|---------|----|----|----|
|                                                                                                |      | 0       | 15 | 30 | 45 |      | 0       | 15 | 30 | 45 |
|                                                                                                | 0    | 0       | 0  | 0  | 0  | 30   | 0       | 0  | 0  | 0  |
|                                                                                                | 1    | 0       | 0  | 0  | 0  | 31   | 0       | 0  | 0  | 0  |
|                                                                                                | 2    | 0       | 0  | 0  | 0  | 32   | 0       | 0  | 0  | 0  |
|                                                                                                | 3    | 0       | 0  | 0  | 0  | 33   | 0       | 0  | 0  | 0  |
|                                                                                                | 4    | 0       | 0  | 0  | 0  | 34   | 0       | 0  | 0  | 0  |
|                                                                                                | 5    | 0       | 0  | 0  | 0  | 35   | 0       | 0  | 0  | 0  |
|                                                                                                | 6    | 0       | 0  | 0  | 0  | 36   | 0       | 0  | 0  | 0  |
|                                                                                                | 7    | 0       | 0  | 0  | 0  | 37   | 0       | 0  | 0  | 0  |
|                                                                                                | 8    | 0       | 0  | 0  | 0  | 38   | 0       | 0  | 0  | 0  |
|                                                                                                | 9    | 0       | 0  | 0  | 0  | 39   | 0       | 0  | 0  | 0  |
|                                                                                                | 10   | 0       | 0  | 0  | 0  | 40   | 0       | 0  | 0  | 0  |
|                                                                                                | 11   | 0       | 0  | 0  | 0  | 41   | 0       | 0  | 0  | 0  |
|                                                                                                | 12   | 0       | 0  | 0  | 0  | 42   | 0       | 0  | 0  | 0  |
|                                                                                                | 13   | 0       | 0  | 0  | 0  | 43   | 0       | 0  | 0  | 0  |
|                                                                                                | 14   | 0       | 0  | 0  | 0  | 44   | 0       | 0  | 0  | 0  |
|                                                                                                | 15   | 0       | 0  | 0  | 0  | 45   | 0       | 0  | 0  | 0  |
|                                                                                                | 16   | 0       | 0  | 0  | 0  | 46   | 0       | 0  | 0  | 0  |
|                                                                                                | 17   | 0       | 0  | 0  | 0  | 47   | 0       | 0  | 0  | 0  |
|                                                                                                | 18   | 0       | 0  | 0  | 0  | 48   | 0       | 0  | 0  | 0  |
|                                                                                                | 19   | 0       | 0  | 0  | 0  | 49   | 0       | 0  | 0  | 0  |
|                                                                                                | 20   | 0       | 0  | 0  | 0  | 50   | 0       | 0  | 0  | 0  |
|                                                                                                | 21   | 0       | 0  | 0  | 0  | 51   | 0       | 0  | 0  | 0  |
|                                                                                                | 22   | 0       | 0  | 0  | 0  | 52   | 0       | 0  | 0  | 0  |
|                                                                                                | 23   | 0       | 0  | 0  | 0  | 53   | 0       | 0  | 0  | 0  |
|                                                                                                | 24   | 0       | 0  | 0  | 0  | 54   | 0       | 0  | 0  | 0  |
|                                                                                                | 25   | 0       | 0  | 0  | 0  | 55   | 0       | 0  | 0  | 0  |
|                                                                                                | 26   | 0       | 0  | 0  | 0  | 56   | 0       | 0  | 0  | 0  |
|                                                                                                | 27   | 0       | 0  | 0  | 0  | 57   | 0       | 0  | 0  | 0  |
|                                                                                                | 28   | 0       | 0  | 0  | 0  | 58   | 0       | 0  | 0  | 0  |
|                                                                                                | 29   | 0       | 0  | 0  | 0  | 59   | 0       | 0  | 0  | 0  |

Observer Location  
(Diagram on back of sheet)  
Distance from Observer to source 225'  
Height of Source (above ground) 150'

Weather Conditions  
Wind Direction SE  
Wind Speed 0-5  
Temperature 65  
Position of Sun S. EAST  
Sky Condition 25% Cloud  
clear, overcast, %clouds,  
color of clouds, etc.)

Plume Description  
Color W/A  
Background SKY  
Type (wet or dry) DRY Dist. \_\_\_\_\_

Comments \_\_\_\_\_

Observers Signature John C. Sutton

Date of Last EPA Method 9 Examination OCTOBER 1997

Examination Passed in EPA Region AK, CN, OH

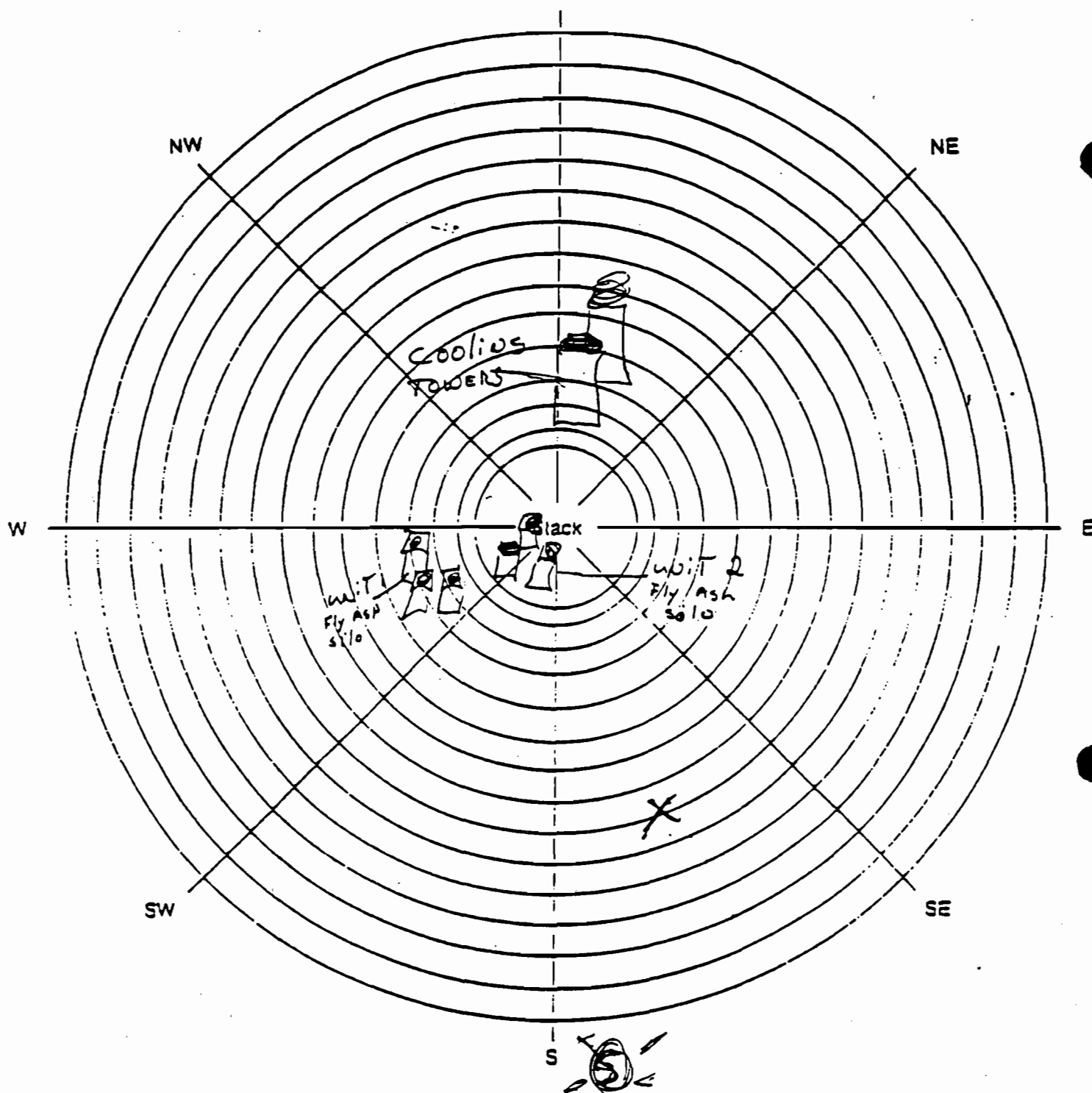
Note: Distance (ft.) from plume center to point in plume where observations made



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Environmental Testing Consultants





LOCATE THE FOLLOWING ON THE DIAGRAM

1. The stack configuration with the stack under observation in the center
2. Observer's position using X to indicate position.
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4. Dotted line between observer and plume indicating observers line of sight when making readings.
5. Circle with S in center to indicate sun location.
6. Any large structures or significant topographical features.

NOTE: Stack configuration is not proportional to distances in feet from stack in the diagram.



Total Source Analysis, Inc.  
Environmental Testing Company  
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**EMISSIONS UNIT EU053**  
**Non-Saleable Ash Silos (U#1-A & U#2-A)**

**ATTACHMENT EU053-05**  
**Emissions Estimates**

**Foster Wheeler Environmental Corporation**  
**EXCEL 7.0 Worksheet Calculation**

**By:** D. Graziani, P.E.

**Date:** 11/3/98

**Ckd. By:** Kim Evans, P.E.

**Date:** 11/10/98

**Cal. No.:** 901103DJG69

**Project No.:** 7830.0020.0056

**Revision No.:** 1

**Project:** St. Johns River Power Park PSD Permit Update

**Subject:** Emissions Estimates for Pneumatic Transfer Systems

Emissions for the silos are based on a pneumatic Transfer Emission Factor of 0.27 lb/ton (Cement Transfer)

| Silo                    | Transfer Rate<br>(TPH) | Emission Factor<br>(lb/ton) |        |
|-------------------------|------------------------|-----------------------------|--------|
| Unit 1 Non-Saleable Ash | 12.5                   | 0.27                        | lb/ton |
| Unit 1 Saleable Ash 1A  | 25                     | 0.27                        | lb/ton |
| Unit 1 Saleable Ash 1B  | 25                     | 0.27                        | lb/ton |
| Unit 2 Non-Saleable Ash | 12.5                   | 0.27                        | lb/ton |
| Unit 2 Saleable Ash 2A  | 25                     | 0.27                        | lb/ton |
| Unit 2 Saleable Ash 2B  | 25                     | 0.27                        | lb/ton |
| Quick Lime Silo         | 400.0                  | 0.27                        | lb/ton |

**Control Efficiency (%)** 99.50%

| Silo                    | Emissions - Uncontrolled |       |       | Emissions - Controlled |       |        |
|-------------------------|--------------------------|-------|-------|------------------------|-------|--------|
|                         | lb/hr                    | tpy   | g/s   | lb/hr                  | tpy   | g/s    |
| Unit 1 Non-Saleable Ash | 3.375                    | 0.616 | 0.043 | 0.017                  | 0.074 | 0.0021 |
| Unit 1 Saleable Ash 1A  | 6.750                    | 1.232 | 0.085 | 0.034                  | 0.148 | 0.0043 |
| Unit 1 Saleable Ash 1B  | 6.750                    | 1.232 | 0.085 | 0.034                  | 0.148 | 0.0043 |
| Unit 2 Non-Saleable Ash | 3.375                    | 0.616 | 0.043 | 0.017                  | 0.074 | 0.0021 |
| Unit 2 Saleable Ash 2A  | 6.750                    | 1.232 | 0.085 | 0.034                  | 0.148 | 0.0043 |
| Unit 2 Saleable Ash 2B  | 6.750                    | 1.232 | 0.085 | 0.034                  | 0.148 | 0.0043 |
| Quick Lime Silo         | 4.500                    | 0.821 | 0.057 | 0.023                  | 0.099 | 0.0028 |

**References:**

AP42 Section 11.2 Concrete Batching  
Flows - Vendor Data

### III. EMISSIONS UNIT INFORMATION

#### A. TYPE OF EMISSIONS UNIT (Regulated and Unregulated Emissions Units)

Emissions Unit Information Section 11

SJRPP - Saleable Ash Silos (1A, 1B, 2A, & 2B)

#### Type of Emissions Unit Addressed in This Section

1. Regulated or Unregulated Emissions Unit? Check one :

- ☒ [ X ] 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.

2. Single Process, Group of Processes, or Fugitive Only? 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).
- ☒ [ X ] 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.

III. Part 1 - 1

**B. GENERAL EMISSIONS UNIT INFORMATION**  
(Regulated and Unregulated Emissions Units)

**Emissions Unit Description and Status**

|                                                                                                                                 |                                      |                                                |
|---------------------------------------------------------------------------------------------------------------------------------|--------------------------------------|------------------------------------------------|
| 1. Description of Emissions Unit Addressed in This Section :<br><br>SJRPP - Saleable Ash Silos (1A, 1B, 2A, & 2B)               |                                      |                                                |
| 2. Emissions Unit Identification Number : 054<br>[ ] No Corresponding ID [ ] Unknown                                            |                                      |                                                |
| 3. Emissions Unit Status<br>Code : A                                                                                            | 4. Acid Rain Unit?<br>[ ] Yes [X] No | 5. Emissions Unit Major<br>Group SIC Code : 49 |
| 6. Emissions Unit Comment :<br><br>Emissions Unit consists of the four fly ash storage silos and the pneumatic transfer system. |                                      |                                                |

**Emissions Unit Information Section**      11

SJRPP - Saleable Ash Silos (1A, 1B, 2A, & 2B)

**Emissions Unit Control Equipment**      1

|                                    |    |
|------------------------------------|----|
| 1. Description :                   |    |
| Fly Ash Baghouses                  |    |
| 2. Control Device or Method Code : | 18 |

**C. EMISSIONS UNIT DETAIL INFORMATION**  
(Regulated Emissions Units Only)

**Emissions Unit Information Section**      11  
SJRPP - Saleable Ash Silos (1A, 1B, 2A, & 2B)

**Emissions Unit Details**

|                                       |             |                    |
|---------------------------------------|-------------|--------------------|
| 1. Initial Startup Date :             | 25-Jan-1986 |                    |
| 2. Long-term Reserve Shutdown Date :  |             |                    |
| 3. Package Unit :                     |             |                    |
| Manufacturer :                        |             | Model Number :     |
| 4. Generator Nameplate Rating :       | MW          |                    |
| 5. Incinerator Information :          |             |                    |
| Dwell Temperature :                   |             | Degrees Fahrenheit |
| Dwell Time :                          |             | Seconds            |
| Incinerator Afterburner Temperature : |             | Degrees Fahrenheit |

**Emissions Unit Operating Capacity**

|                                         |          |               |
|-----------------------------------------|----------|---------------|
| 1. Maximum Heat Input Rate :            | mmBtu/hr |               |
| 2. Maximum Incinerator Rate :           | lb/hr    | tons/day      |
| 3. Maximum Process or Throughput Rate : | 25       | tons per hour |
| 4. Maximum Production Rate :            |          |               |
| 5. Operating Capacity Comment :         |          |               |

**Emissions Unit Operating Schedule**

|                                        |                  |
|----------------------------------------|------------------|
| Requested Maximum Operating Schedule : |                  |
| 24 hours/day                           | 7 days/week      |
| 52 weeks/year                          | 8,760 hours/year |

**D. EMISSIONS UNIT REGULATIONS  
(Regulated Emissions Units Only)**

**Emissions Unit Information Section** 11  
SJRPP - Saleable Ash Silos (1A, 1B, 2A, & 2B)

**Rule Applicability Analysis**

Units were subject to PSD Review including the application of BACT.

III. Part 6a - 1

DEP Form No. 62-210.900(1) - Form  
Effective : 3-21-96



**List of Applicable Regulations**

Rule 62-210.300(1), F.A.C., Air Construction Permits

Rule 62-210.550, F.A.C., Stack Height Policy

Rule 62-210.650, F.A.C., Circumvention

Rule 62-297.310, F.A.C., General Test Requirements

Rule 62-297.401(5) & (9), F.A.C., EPA Methods 5 and 9

Rule 62-210.700(1), (4), & (6), F.A.C., Excess Emissions

Rule 62-4.130, F.A.C., Plant Operations - Problems

Rule 62-204.800(7)(e), F.A.C., Adoption of the NSPS Appendices (As Noted)

Rule 62-210.300(5), F.A.C., Notification of Start-up

Jacksonville Environmental Protection Board, Rule 2 - Air Pollution (as noted)

Rule 2.105, Maintenance of Air Pollution Control Devices

Rule 2.301, Adoption of Chapter 62-210, F.A.C., (As Noted)

Rule 2.1101, Adoption of Chapter 62-297, F.A.C., (As Noted)

III. Part 6b - 1

DEP Form No. 62-210.900(1) - Form  
Effective : 3-21-96

**List of Applicable Regulations**

## E. EMISSION POINT (STACK/VENT) INFORMATION

### Emissions Unit Information Section 11

SJRPP - Saleable Ash Silos (1A, 1B, 2A, & 2B)

#### Emission Point Description and Type :

|                                                                                      |                                                                                                                                          |
|--------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------|
| 1. Identification of Point on Plot Plan or Flow Diagram :                            | FAS-1, -2, -3, & -4                                                                                                                      |
| 2. Emission Point Type Code :                                                        | 3                                                                                                                                        |
| 3. Descriptions of Emission Points Comprising this Emissions Unit :                  | Four Discharge Points - Baghouse Exhaust Stacks                                                                                          |
| 4. ID Numbers or Descriptions of Emission Units with this Emission Point in Common : | FAS-1: Fly Ash Silo 1A Baghouse<br>FAS-2: Fly Ash Silo 1B Baghouse<br>FAS-3: Fly Ash Silo 2A Baghouse<br>FAS-4: Fly Ash Silo 2B Baghouse |
| 5. Discharge Type Code :                                                             | H                                                                                                                                        |
| 6. Stack Height :                                                                    | 120 feet                                                                                                                                 |
| 7. Exit Diameter :                                                                   | 1.80 feet                                                                                                                                |
| 8. Exit Temperature :                                                                | 80 °F                                                                                                                                    |
| 9. Actual Volumetric Flow Rate :                                                     | 13,467 acfm                                                                                                                              |
| 10. Percent Water Vapor :                                                            | 0.50 %                                                                                                                                   |
| 11. Maximum Dry Standard Flow Rate :                                                 | 13,467 dscfm                                                                                                                             |
| 12. Nonstack Emission Point Height :                                                 | feet                                                                                                                                     |
| 13. Emission Point UTM Coordinates :                                                 | Zone : 17 East (km) : 447.490 North (km) : 3,367.050                                                                                     |
| 14. Emission Point Comment :                                                         |                                                                                                                                          |

III. Part 7b - 1

III. Part 7b - 2

DEP Form No. 62-210.900(1) - Form  
Effective : 3-21-96

## F. SEGMENT (PROCESS/FUEL) INFORMATION

Emissions Unit Information Section 11

SJRPP - Saleable Ash Silos (1A, 1B, 2A, & 2B)

**Segment Description and Rate :** Segment 1

|                                                                                                  |                                     |
|--------------------------------------------------------------------------------------------------|-------------------------------------|
| 1. Segment Description (Process/Fuel Type and Associated Operating Method/Mode) :<br><br>Fly Ash |                                     |
| 2. Source Classification Code (SCC) : 30501222                                                   |                                     |
| 3. SCC Units : Tons Transferred Or Handled                                                       |                                     |
| 4. Maximum Hourly Rate : 25.00                                                                   | 5. Maximum Annual Rate : 219,000.00 |
| 6. Estimated Annual Activity Factor : 0.00                                                       |                                     |
| 7. Maximum Percent Sulfur :                                                                      | 8. Maximum Percent Ash :            |
| 9. Million Btu per SCC Unit :                                                                    |                                     |
| 10. Segment Comment :                                                                            |                                     |

III. Part 8 - 1

**G. EMISSIONS UNIT POLLUTANTS**  
**(Regulated and Unregulated Emissions Units)**

**Emissions Unit Information Section** 11

SJRPP - Saleable Ash Silos (1A, 1B, 2A, & 2B)

| 1. Pollutant Emitted | 2. Primary Control Device Code | 3. Secondary Control Device Code | 4. Pollutant Regulatory Code |
|----------------------|--------------------------------|----------------------------------|------------------------------|
| 1 - PM               | 018                            |                                  | EL                           |
| 2 - PM10             | 018                            |                                  | EL                           |

III. Part 9a - 1

DEP Form No. 62-210.900(1) - Form

Effective : 3-21-96

**H. EMISSIONS UNIT POLLUTANT DETAIL INFORMATION**  
**(Regulated Emissions Units Only - Emissions Limited Pollutants Only)**

**Emissions Unit Information Section**      11

SJRPP - Saleable Ash Silos (1A, 1B, 2A, & 2B)

**Pollutant Potential/Estimated Emissions :**      Pollutant      1

|                                                               |                   |                         |
|---------------------------------------------------------------|-------------------|-------------------------|
| 1. Pollutant Emitted : <b>PM</b>                              |                   |                         |
| 2. Total Percent Efficiency of Control :                      | 99.50             | %                       |
| 3. Potential Emissions :                                      | 0.0340000 lb/hour | 0.1480000 tons/year     |
| 4. Synthetically Limited?<br>[   ] Yes            [X ] No     |                   |                         |
| 5. Range of Estimated Fugitive/Other Emissions:               |                   | to            tons/year |
| 6. Emissions Factor                                           | 0                 | Units lb/ton            |
| Reference                                                     | AP-42, (EF=0.27)  |                         |
| 7. Emissions Method Code :      3                             |                   |                         |
| 8. Calculations of Emissions :<br><br>See Attachment EU054-05 |                   |                         |
| 9. Pollutant Potential/Estimated Emissions Comment :          |                   |                         |

III. Part 9b - 1

DEP Form No. 62-210.900(1) - Form

Effective : 3-21-96

**H. EMISSIONS UNIT POLLUTANT DETAIL INFORMATION**  
**(Regulated Emissions Units Only - Emissions Limited Pollutants Only)**

**Emissions Unit Information Section** 11

SJRPP - Saleable Ash Silos (1A, 1B, 2A, & 2B)

**Pollutant Potential/Estimated Emissions :** Pollutant 2

|                                                                                                                                                                  |                   |                     |
|------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------|---------------------|
| 1. Pollutant Emitted : <b>PM10</b>                                                                                                                               |                   |                     |
| 2. Total Percent Efficiency of Control :                                                                                                                         | 99.50             | %                   |
| 3. Potential Emissions :                                                                                                                                         | 0.0340000 lb/hour | 0.1480000 tons/year |
| 4. Synthetically Limited?<br>[ ] Yes [X] No                                                                                                                      |                   |                     |
| 5. Range of Estimated Fugitive/Other Emissions:<br><div style="text-align: right; margin-right: 100px;">to</div> <div style="text-align: right;">tons/year</div> |                   |                     |
| 6. Emissions Factor                                                                                                                                              | 0                 | Units lb/ton        |
| Reference                                                                                                                                                        | AP-42, (EF=0.27)  |                     |
| 7. Emissions Method Code : 3                                                                                                                                     |                   |                     |
| 8. Calculations of Emissions :<br><br>See Attachment EU054-05                                                                                                    |                   |                     |
| 9. Pollutant Potential/Estimated Emissions Comment :                                                                                                             |                   |                     |

III. Part 9b - 2



**Emissions Unit Information Section** 11  
SJRPP - Saleable Ash Silos (1A, 1B, 2A, & 2B)

**Pollutant Information Section** 1

**Allowable Emissions** 1

|                                                                                                                                                                                           |      |             |                 |
|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------|-------------|-----------------|
| 1. Basis for Allowable Emissions Code :                                                                                                                                                   |      | OTHER       |                 |
| 2. Future Effective Date of Allowable Emissions :                                                                                                                                         |      | 01-Aug-1999 |                 |
| 3. Requested Allowable Emissions and Units :                                                                                                                                              |      | 5.00        | Percent Opacity |
| 4. Equivalent Allowable Emissions :                                                                                                                                                       |      |             |                 |
|                                                                                                                                                                                           | 0.03 | lb/hour     | 0.15 tons/year  |
| 5. Method of Compliance :<br>Stack Test Waiver Requested Rule 62-297.310(7)(c), F.A.C.                                                                                                    |      |             |                 |
| 6. Pollutant Allowable Emissions Comment (Desc. of Related Operating Method/Mode) :<br>Updated BACT revised from 10% opacity to a requested no visible emissions limitation (5% Opacity). |      |             |                 |

III. Part 9c - 1

**Emissions Unit Information Section** 11  
SJRPP - Saleable Ash Silos (1A, 1B, 2A, & 2B)

**Pollutant Information Section** 2

**Allowable Emissions** 1

|                                                                                                                                                                                           |  |             |                 |
|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--|-------------|-----------------|
| 1. Basis for Allowable Emissions Code :                                                                                                                                                   |  | OTHER       |                 |
| 2. Future Effective Date of Allowable Emissions :                                                                                                                                         |  | 01-Aug-1999 |                 |
| 3. Requested Allowable Emissions and Units :                                                                                                                                              |  | 5.00        | Percent Opacity |
| 4. Equivalent Allowable Emissions :                                                                                                                                                       |  | 0.03        | lb/hour         |
|                                                                                                                                                                                           |  | 0.15        | tons/year       |
| 5. Method of Compliance :<br>Stack Test Waiver Requested Rule 62-297.310(7)(c), F.A.C.                                                                                                    |  |             |                 |
| 6. Pollutant Allowable Emissions Comment (Desc. of Related Operating Method/Mode) :<br>Updated BACT revised from 10% opacity to a requested no visible emissions limitation (5% Opacity). |  |             |                 |

III. Part 9c - 2

**I. VISIBLE EMISSIONS INFORMATION**  
**(Regulated Emissions Units Only)**

**Emissions Unit Information Section**     11  
SJRPP - Saleable Ash Silos (1A, 1B, 2A, & 2B)

**Visible Emissions Limitation :** Visible Emissions Limitation     1

|                                                                                                                                                                                                                                                                                                                         |
|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 1. Visible Emissions Subtype :                      05                                                                                                                                                                                                                                                                  |
| 2. Basis for Allowable Opacity :                      OTHER                                                                                                                                                                                                                                                             |
| 3. Requested Allowable Opacity :<br><div style="text-align: right; margin-top: 10px;">Normal Conditions :                      5                      %<br/>Exceptional Conditions :                      100                      %<br/>Maximum Period of Excess Opacity Allowed :                      min/hour</div> |
| 4. Method of Compliance :<br><br>EPA Method 9                                                                                                                                                                                                                                                                           |
| 5. Visible Emissions Comment :<br><br>Updated BACT revised from 10% opacity to a requested no visible emissions limitation (5% Opacity).<br><br>Excess Emissions - 2 hours in any 24-hour period                                                                                                                        |

III. Part 10 - 1

**J. CONTINUOUS MONITOR INFORMATION**  
**(Regulated Emissions Units Only)**

**Emissions Unit Information Section**

III. Part 11 - 1

DEP Form No. 62-210.900(1) - Form  
Effective : 3-21-96

## K. PREVENTION OF SIGNIFICANT DETERIORATION (PSD) INCREMENT TRACKING INFORMATION

Emissions Unit Information Section 11

SJRPP - Saleable Ash Silos (1A, 1B, 2A, & 2B)

### PSD Increment Consumption Determination

#### 1. Increment Consuming for Particulate Matter or Sulfur Dioxide?

- ☐ The emissions unit is undergoing PSD review as part of this application, or has undergone PSD review previously, for particulate matter or sulfur dioxide. If so, emissions unit consumes increment.
- ☐ The facility addressed in this application is classified as an EPA major source pursuant to paragraph (c) of the definition of "major source of air pollution" in Chapter 62-213, F.A.C., and the emissions unit addressed in this section commenced (or will commence) construction after January 6, 1975. If so, baseline emissions are zero, and emissions unit consumes increment.
- ☐ The facility addressed in this application is classified as an EPA major source, and the emissions unit began initial operation after January 6, 1975, but before December 27, 1977. If so, baseline emissions are zero, and emissions unit consumes increment.
- ☒ For any facility, the emissions unit began (or will begin) initial operation after December 27, 1977. If so, baseline emissions are zero, and emissions unit consumes increment.
- ☐ None of the above apply. If so, the baseline emissions of the emissions unit are nonzero. In such case, additional analysis, beyond the scope of this application, is needed to determine whether changes in emissions have occurred (or will occur) after the baseline date that may consume or expand increment.

III. Part 12 - 1

## 2. Increment Consuming for Nitrogen Dioxide?

- ☐ The emissions unit addressed in this section is undergoing PSD review as part of this application, or has undergone PSD review previously, for nitrogen dioxide. If so, emissions unit consumes increment.
- ☐ The facility addressed in this application is classified as an EPA major source pursuant to paragraph (c) of the definition of "major source of air pollution" in Chapter 62-213, F.A.C., and the emissions unit addressed in this section commenced (or will commence) construction after February 8, 1988. If so, baseline emissions are zero, and emissions unit consumes increment.
- ☐ The facility addressed in this application is classified as an EPA major source, and the emissions unit began initial operation after February 8, 1988, but before March 28, 1988. If so, baseline emissions are zero, and emissions unit consumes increment.
- ☐ For any facility, the emissions unit began (or will begin) initial operation after March 28, 1988. If so, baseline emissions are zero, and emissions unit consumes increment.
- ☐ None of the above apply. If so, baseline emissions of the emissions unit are nonzero. In such case, additional analysis, beyond the scope of this application, is needed to determine whether changes in emissions have occurred (or will occur) after the baseline date that may consume or expand increment.

### 3. Increment Consuming/Expanding Code :

PM : C

SO2 : U

NO2 : U

### 4. Baseline Emissions :

PM : 0.0000 lb/hour

0.0000 tons/year

SO2 : lb/hour

tons/year

NO2 :

tons/year

### 5. PSD Comment :

## III. Part 12 - 2

## L. EMISSIONS UNIT SUPPLEMENTAL INFORMATION

### Emissions Unit Information Section 11

SJRPP - Saleable Ash Silos (1A, 1B, 2A, & 2B)

#### **Supplemental Requirements for All Applications**

|                                                                   |          |
|-------------------------------------------------------------------|----------|
| 1. Process Flow Diagram :                                         | EU054-01 |
| 2. Fuel Analysis or Specification :                               | NA       |
| 3. Detailed Description of Control Equipment :                    | EU054-02 |
| 4. Description of Stack Sampling Facilities :                     | EU054-03 |
| 5. Compliance Test Report :                                       | EU054-04 |
| 6. Procedures for Startup and Shutdown :                          | NA       |
| 7. Operation and Maintenance Plan :                               | NA       |
| 8. Supplemental Information for Construction Permit Application : | EU054-05 |
| 9. Other Information Required by Rule or Statute :                | NA       |

#### **Additional Supplemental Requirements for Category I Applications Only**

|                                                          |
|----------------------------------------------------------|
| 10. Alternative Methods of Operations :                  |
| 11. Alternative Modes of Operation (Emissions Trading) : |

III. Part 13 - 1

12. Identification of Additional Applicable Requirements :

13. Compliance Assurance Monitoring  
Plan :

14. Acid Rain Application (Hard-copy Required) :

Acid Rain Part - Phase II (Form No. 62-210.900(1)(a))

Repowering Extension Plan (Form No. 62-210.900(1)(a)1.)

New Unit Exemption (Form No. 62-210.900(1)(a)2.)

Retired Unit Exemption (Form No. 62-210.900(1)(a)3.)

III. Part 13 - 2



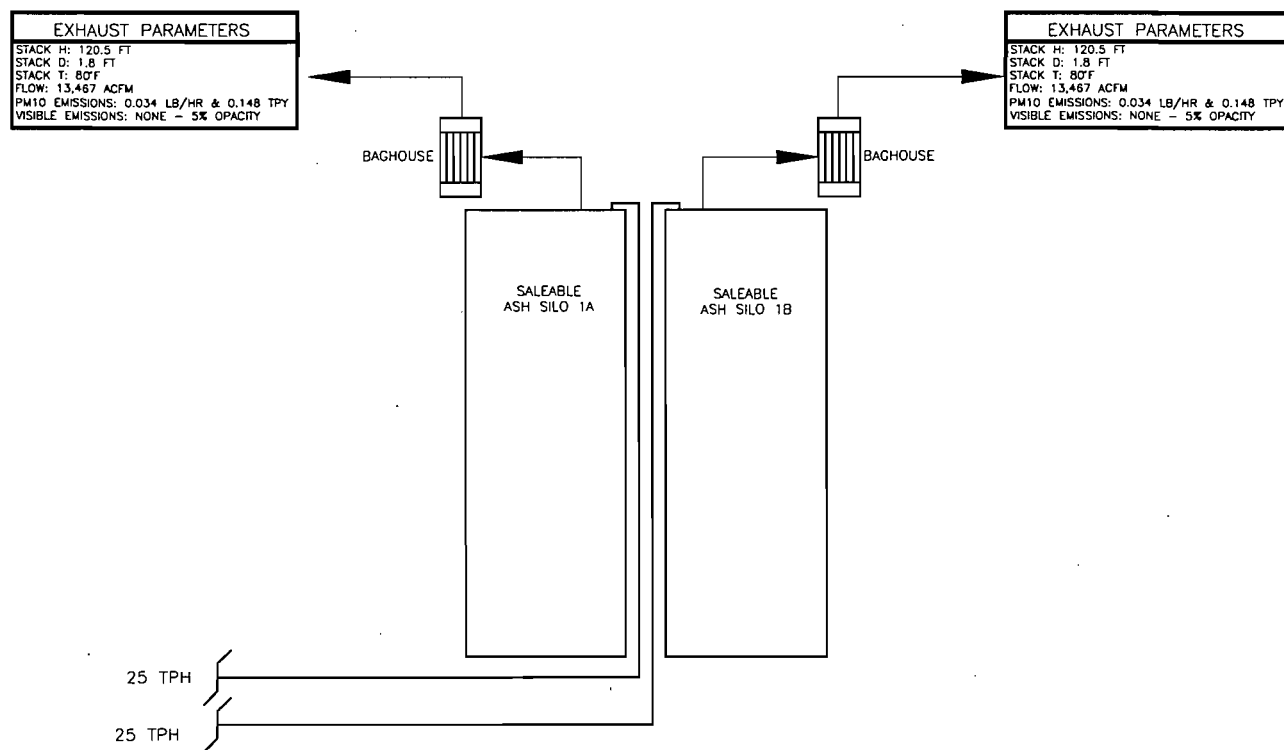
**EMISSIONS UNIT EU054**  
**Saleable Ash Silos (1A, 1B, 2A & 2B)**

**ATTACHMENT EU054-01**  
**Process Flow Diagram**

# ST JOHNS RIVER POWER PARK

## UNIT 1 SALEABLE ASH SILOS

### ATTACHMENT EU054-01a

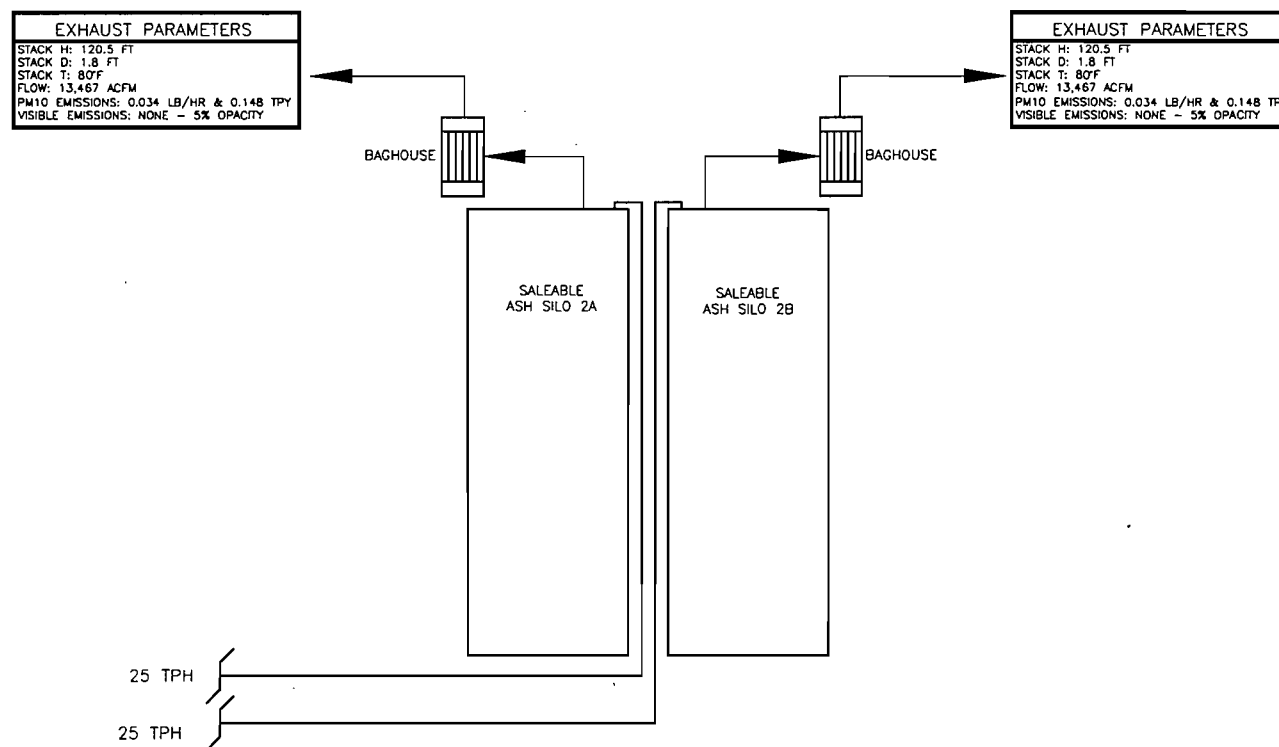


|                                                          |              |                              |
|----------------------------------------------------------|--------------|------------------------------|
| <b>JEA</b>                                               |              |                              |
| ST JOHNS RIVER POWER PARK<br>PSD PERMIT UPDATE           |              |                              |
| Simplified Process Flow Diagram<br>Emissions Unit ID 054 |              |                              |
| <b>FOSTER WHEELER ENVIRONMENTAL CORPORATION</b>          |              |                              |
| SCALE N/A                                                | PREPARED DJG | CAD FILE NO.<br>EU054cPF.DWG |
| DATE: 02/16/99                                           | CHECKED MAE  | FIGURE NO.<br>EU054-01a      |
|                                                          | APPROVED DJF |                              |

# ST JOHNS RIVER POWER PARK

## UNIT 2 SALEABLE ASH SILOS

### ATTACHMENT EU054-01b



**JEA**  
 ST JOHNS RIVER POWER PARK  
 PSD PERMIT UPDATE  
 Simplified Process Flow Diagram  
 Emissions Unit ID 054

**FOSTER WHEELER ENVIRONMENTAL CORPORATION**

|                |              |                           |
|----------------|--------------|---------------------------|
| SCALE N/A      | PREPARED DJG | CAD FILE NO. EU054bPF.DWG |
| DATE: 02/16/99 | CHECKED MAE  | FIGURE NO. EU054-01b      |
|                | APPROVED DJF |                           |

**EMISSIONS UNIT EU054**  
**Saleable Ash Silos (1A, 1B, 2A & 2B)**

**ATTACHMENT EU054-02**  
**Control Equipment Description**

**Emissions Unit EU054**

**3.JRPP - Saleable Ash Silos (1A, 1b, 2A, & 2B)**

**Control Equipment Description**

**Control Equipment**

**Four Separate Fabric Filters/Baghouses - Existing Equipment**

**Exhaust Parameters**

**Stack Height: 120 feet; Stack Diameter: 21.6 inches; Stack Exhaust Temperature: Ambient; and Stack Flows 13,467 ACFM per stack**

**Reasonable Assurances**

**Emission Limitation - No Visible Emissions (5% Opacity)**

**See Attachment EU054-04, Compliance Test Reports**

**EMISSIONS UNIT EU054**  
**Saleable Ash Silos (1A, 1B, 2A & 2B)**

**ATTACHMENT EU054-03**  
**Stack Sampling Facilities Description**

## **STACK SAMPLING FACILITIES DESCRIPTION**

Pursuant to Rule 62-297.310(6), F.A.C. JEA will ensure that the required stack sampling facilities include sampling ports (Rule 62-297.310(6)(c), F.A.C.), work platforms (Rule 62-297.310(6)(d), F.A.C.), access to work platforms (Rule 62-297.310(6)(e), F.A.C.), electrical power (Rule 62-297.310(6)(f), F.A.C.), and sampling equipment support (Rule 62-297.310(6)(g), F.A.C.). All stack sampling facilities will meet any Occupational Safety and Health Administration (OSHA) Safety and Health Standards described in 29 CFR Part 1910, Subparts D and E.

In accordance with Rule 62-297.310(6)(b), F.A.C., JEA will use temporary stack sampling facilities for the existing units which are not required to conduct a compliance test on at least an annual basis may use. When electing to use temporary sampling facilities on an emissions unit, and the Department elects to test the unit, JEA will install the temporary facilities on the emissions unit within 5 days of a request by the Department. The temporary sampling facilities will remain on the emissions unit until the test is completed.

**EMISSIONS UNIT EU054**  
**Saleable Ash Silos (1A, 1B, 2A & 2B)**

**ATTACHMENT EU054-04**  
**Compliance Test Report**



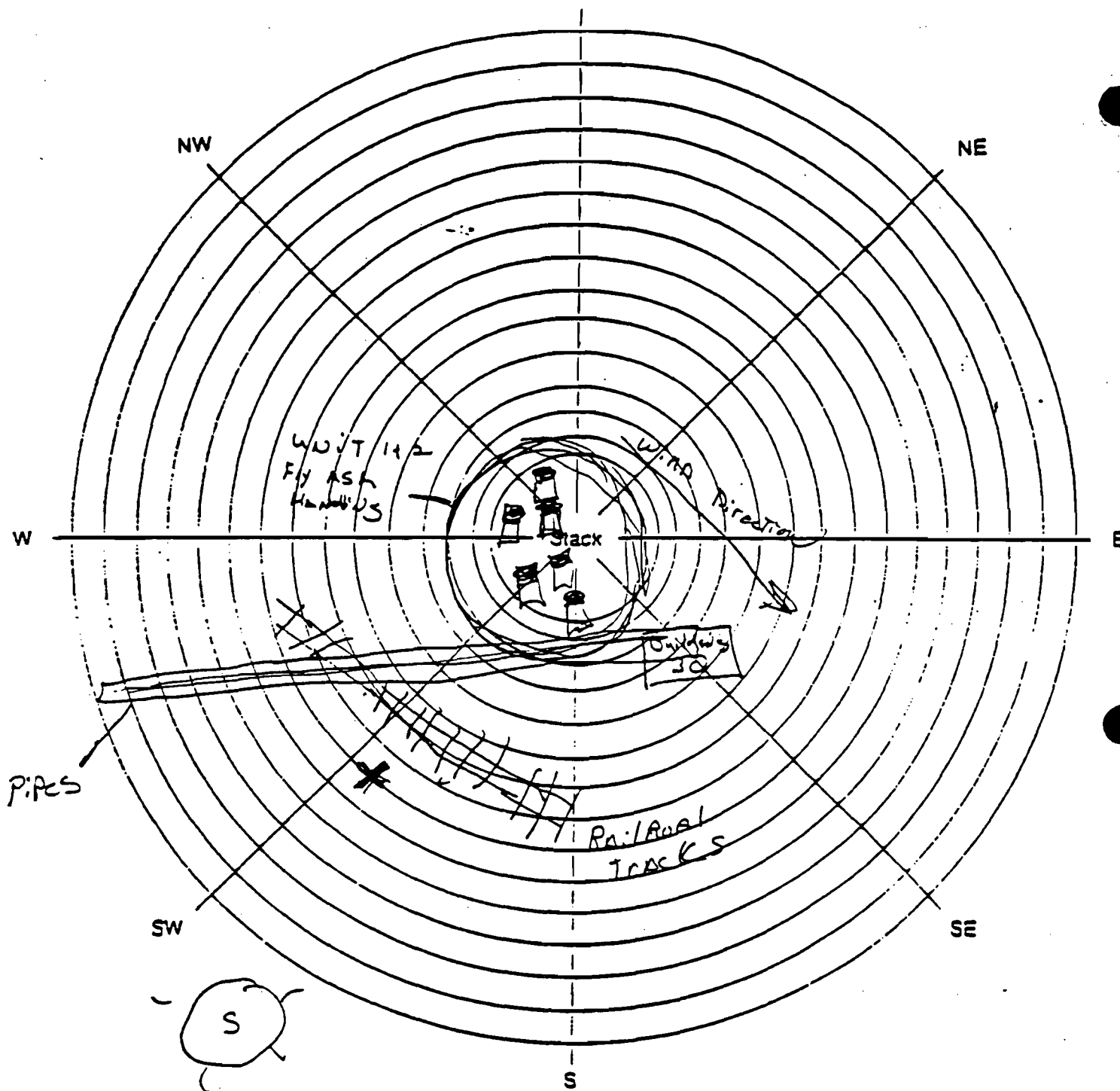
Client J.E.A. Best Available CopyObserver John SmithProject No. 97-422Date 11-4-97Plant Name SJRPPObservation began 1310Location JACKSONVILLE FLended 1411Type of Facility POWER PLANT

| Source Identification<br>(Stack, Duct, etc.)         | Min. | Seconds |    |    |    | Min. | Seconds |    |    |    |
|------------------------------------------------------|------|---------|----|----|----|------|---------|----|----|----|
|                                                      |      | 0       | 15 | 30 | 45 |      | 0       | 15 | 30 | 45 |
| <u>UNIT 1+2 FLY ASH</u>                              | 0    | 0       | 0  | 0  | 0  | 30   | 0       | 0  | 0  | 0  |
| <u>HANDLING AREA</u>                                 | 1    | 0       | 0  | 0  | 0  | 31   | 0       | 0  | 0  | 0  |
|                                                      | 2    | 0       | 0  | 0  | 0  | 32   | 0       | 0  | 0  | 0  |
|                                                      | 3    | 0       | 0  | 0  | 0  | 33   | 0       | 0  | 0  | 0  |
| Observer Location<br>(Diagram on back of sheet)      | 4    | 0       | 0  | 0  | 0  | 34   | 0       | 0  | 0  | 0  |
| Distance from Observer to source <u>150'</u>         | 5    | 0       | 0  | 0  | 0  | 35   | 0       | 0  | 0  | 0  |
| Height of Source (above ground) <u>0-150'</u>        | 6    | 0       | 0  | 0  | 0  | 36   | 0       | 0  | 0  | 0  |
|                                                      | 7    | 0       | 0  | 0  | 0  | 37   | 0       | 0  | 0  | 0  |
| Weather Conditions                                   | 8    | 0       | 0  | 0  | 0  | 38   | 0       | 0  | 0  | 0  |
| Wind Direction <u>SE</u>                             | 9    | 0       | 0  | 0  | 0  | 39   | 0       | 0  | 0  | 0  |
| Wind Speed <u>0-5</u>                                | 10   | 0       | 0  | 0  | 0  | 40   | 0       | 0  | 0  | 0  |
| Temperature <u>70</u>                                | 11   | 0       | 0  | 0  | 0  | 41   | 0       | 0  | 0  | 0  |
| Position of Sun <u>SOUTH</u>                         | 12   | 0       | 0  | 0  | 0  | 42   | 0       | 0  | 0  | 0  |
| Sky Condition <u>CLEAR</u>                           | 13   | 0       | 0  | 0  | 0  | 43   | 0       | 0  | 0  | 0  |
| (clear, overcast, %clouds,<br>color of clouds, etc.) | 14   | 0       | 0  | 0  | 0  | 44   | 0       | 0  | 0  | 0  |
|                                                      | 15   | 0       | 0  | 0  | 0  | 45   | 0       | 0  | 0  | 0  |
| Plume Description                                    | 16   | 0       | 0  | 0  | 0  | 46   | 5       | 5  | 5  | 5  |
| Color <u>BROWN</u>                                   | 17   | 0       | 0  | 0  | 0  | 47   | 0       | 0  | 0  | 0  |
| Background <u>SKY</u>                                | 18   | 0       | 0  | 0  | 0  | 48   | 0       | 0  | 0  | 0  |
| Type (wet or dry) <u>Dry</u> Dist. _____             | 19   | 0       | 0  | 0  | 0  | 49   | 0       | 0  | 0  | 0  |
| Comments                                             | 20   | 0       | 0  | 0  | 0  | 50   | 0       | 0  | 0  | 0  |
|                                                      | 21   | 0       | 0  | 0  | 0  | 51   | 0       | 0  | 0  | 0  |
|                                                      | 22   | 0       | 0  | 0  | 0  | 52   | 0       | 0  | 0  | 0  |
|                                                      | 23   | 5       | 5  | 0  | 0  | 53   | 0       | 0  | 0  | 0  |
|                                                      | 24   | 5       | 5  | 5  | 5  | 54   | 0       | 0  | 0  | 0  |
|                                                      | 25   | 0       | 0  | 0  | 0  | 55   | 0       | 0  | 0  | 0  |
| Observers Signature                                  | 26   | 0       | 0  | 0  | 0  | 56   | 0       | 0  | 0  | 0  |
| <u>John C. Smith</u>                                 | 27   | 0       | 0  | 0  | 0  | 57   | 0       | 0  | 0  | 0  |
| Date of Last EPA Method 9 Examination                | 28   | 0       | 0  | 0  | 0  | 58   | 0       | 0  | 0  | 0  |
| <u>OCTOBER 1997</u>                                  | 29   | 0       | 0  | 0  | 0  | 59   | 0       | 0  | 0  | 0  |
| Examination Passed in EPA Region                     |      |         |    |    |    |      |         |    |    |    |
| <u>148211</u> <u>CH</u>                              |      |         |    |    |    |      |         |    |    |    |

Distance (ft.) from plume outlet to point in plume where observations made



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Environmental Testing Consultants



# LOCATE THE FOLLOWING ON THE DIAGRAM

1. The stack configuration with the stack under observation in the center
2. Observer's position using X to indicate position.
3. Arrow pointing direction wind is blowing.
4. Dotted line between observer and plume indicating observers line of sight when making readings.
5. Circle with S in center to indicate sun location.
6. Any large structures or significant topographical features.

NOTE: Stack configuration is not proportional to distances in feet from stack in the diagram.



Total Source Analysis, Inc.  
Environmental Science Center

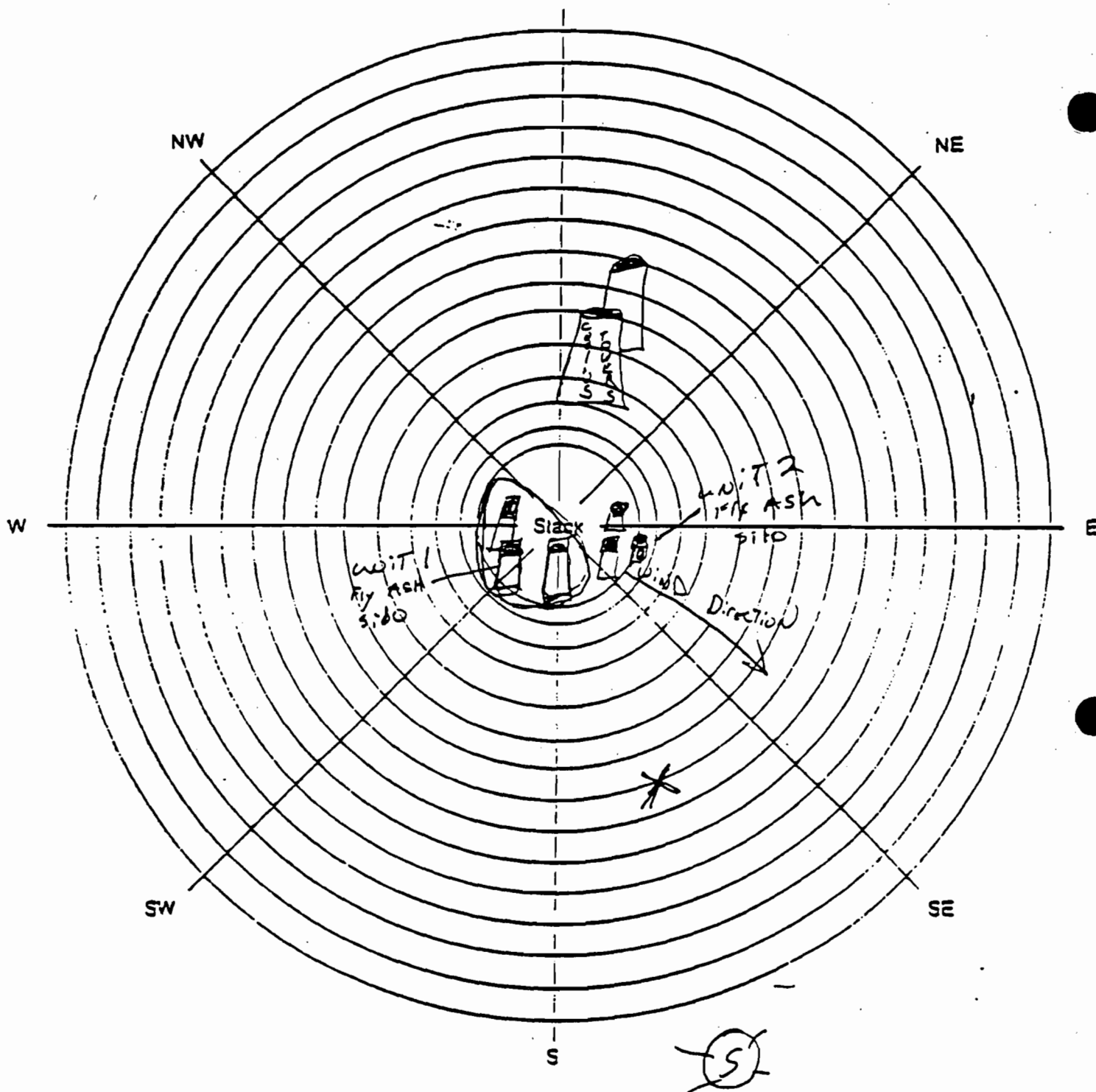
Client JEA Best Available Copy Observer John Sutton  
 Project No. 97-422 Date 11-4-97  
 Plant Name STRPP Observation began CEYC  
 Location JACKSONVILLE FL. ended CEYC  
 Facility POWER PLANT

| Source Identification<br>(Stack, Duct, etc.) | Min. | Seconds |    |    |    | Min. | Seconds |    |    |    |
|----------------------------------------------|------|---------|----|----|----|------|---------|----|----|----|
|                                              |      | 0       | 15 | 30 | 45 |      | 0       | 15 | 30 | 45 |
| <u>FLY ASH, Silo (unit 1)</u>                | 0    | 0       | 0  | 0  | 0  | 30   | 0       | 0  | 0  | 0  |
| <u>(SOUTH SIDE)</u>                          | 1    | 0       | 0  | 0  | 0  | 31   | 0       | 0  | 0  | 0  |
|                                              | 2    | 0       | 0  | 0  | 0  | 32   | 0       | 0  | 0  | 0  |
|                                              | 3    | 0       | 0  | 0  | 0  | 33   | 0       | 0  | 0  | 0  |
| Observer Location                            | 4    | 0       | 0  | 0  | 0  | 34   | 0       | 0  | 0  | 0  |
| (Diagram on back of sheet)                   | 5    | 0       | 0  | 0  | 0  | 35   | 0       | 0  | 0  | 0  |
| Distance from Observer to source <u>260'</u> | 6    | 0       | 5  | 0  | 0  | 36   | 0       | 0  | 0  | 0  |
| Height of Source (above ground) <u>150'</u>  | 7    | 0       | 0  | 0  | 0  | 37   | 0       | 0  | 0  | 0  |
| Weather Conditions                           | 8    | 0       | 0  | 0  | 0  | 38   | 0       | 0  | 0  | 0  |
| Wind Direction <u>SE</u>                     | 9    | 0       | 0  | 0  | 0  | 39   | 0       | 0  | 0  | 0  |
| Wind Speed <u>0-5</u>                        | 10   | 0       | 0  | 0  | 0  | 40   | 0       | 0  | 0  | 0  |
| Temperature <u>65</u>                        | 11   | 0       | 0  | 0  | 0  | 41   | 0       | 0  | 0  | 0  |
| Position of Sun <u>SOUTH EAST</u>            | 12   | 0       | 0  | 0  | 0  | 42   | 0       | 0  | 0  | 0  |
| Sky Condition <u>Clouds</u>                  | 13   | 0       | 0  | 0  | 0  | 43   | 0       | 0  | 0  | 0  |
| (clear, overcast, etc.)                      | 14   | 0       | 0  | 0  | 0  | 44   | 0       | 0  | 0  | 0  |
| color of clouds, etc.)                       | 15   | 0       | 0  | 0  | 0  | 45   | 0       | 0  | 0  | 0  |
| Plume Description                            | 16   | 0       | 0  | 0  | 0  | 46   | 0       | 0  | 0  | 0  |
| Color <u>W/ H</u>                            | 17   | 0       | 0  | 0  | 0  | 47   | 0       | 0  | 0  | 0  |
| Background <u>CRY</u>                        | 18   | 0       | 0  | 0  | 0  | 48   | 0       | 0  | 0  | 0  |
| Type (wet or dry) <u>Dry</u> Dist. _____     | 19   | 0       | 0  | 0  | 0  | 49   | 0       | 0  | 0  | 0  |
| Comments                                     | 20   | 0       | 0  | 0  | 0  | 50   | 0       | 0  | 0  | 0  |
|                                              | 21   | 0       | 0  | 0  | 0  | 51   | 0       | 0  | 0  | 0  |
|                                              | 22   | 0       | 0  | 0  | 0  | 52   | 0       | 0  | 0  | 0  |
|                                              | 23   | 0       | 0  | 0  | 0  | 53   | 0       | 0  | 0  | 0  |
|                                              | 24   | 0       | 0  | 0  | 0  | 54   | 0       | 0  | 0  | 0  |
|                                              | 25   | 0       | 0  | 0  | 0  | 55   | 0       | 0  | 0  | 0  |
| Observers Signature                          | 26   | 0       | 0  | 0  | 0  | 56   | 0       | 0  | 0  | 0  |
| <u>John Sutton</u>                           | 27   | 0       | 0  | 0  | 0  | 57   | 0       | 0  | 0  | 0  |
| Date of Last EPA Method 9 Examination        | 28   | 0       | 0  | 0  | 0  | 58   | 0       | 0  | 0  | 0  |
| <u>Oct 1997</u>                              | 29   | 0       | 0  | 0  | 0  | 59   | 0       | 0  | 0  | 0  |
| Examination Passed in EPA Region             |      |         |    |    |    |      |         |    |    |    |

Distance (ft.) from plume center to point in plume where observations made



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 Environmental Testing Consultants



LOCATE THE FOLLOWING ON THE DIAGRAM

1. The stack configuration with the stack under observation in the center
2. Observer's position using X to indicate position.
3. Arrow pointing direction wind is blowing.
4. Dotted line between observer and plume indicating observers line of sight when making readings.
5. Circle with S in center to indicate sun location.
6. Any large structures or significant topographical features.

NOTE: Stack configuration is not proportional to distances in feet from stack in the diagram.



Total Source Analysis, Inc.  
Environmental Testing Consultants

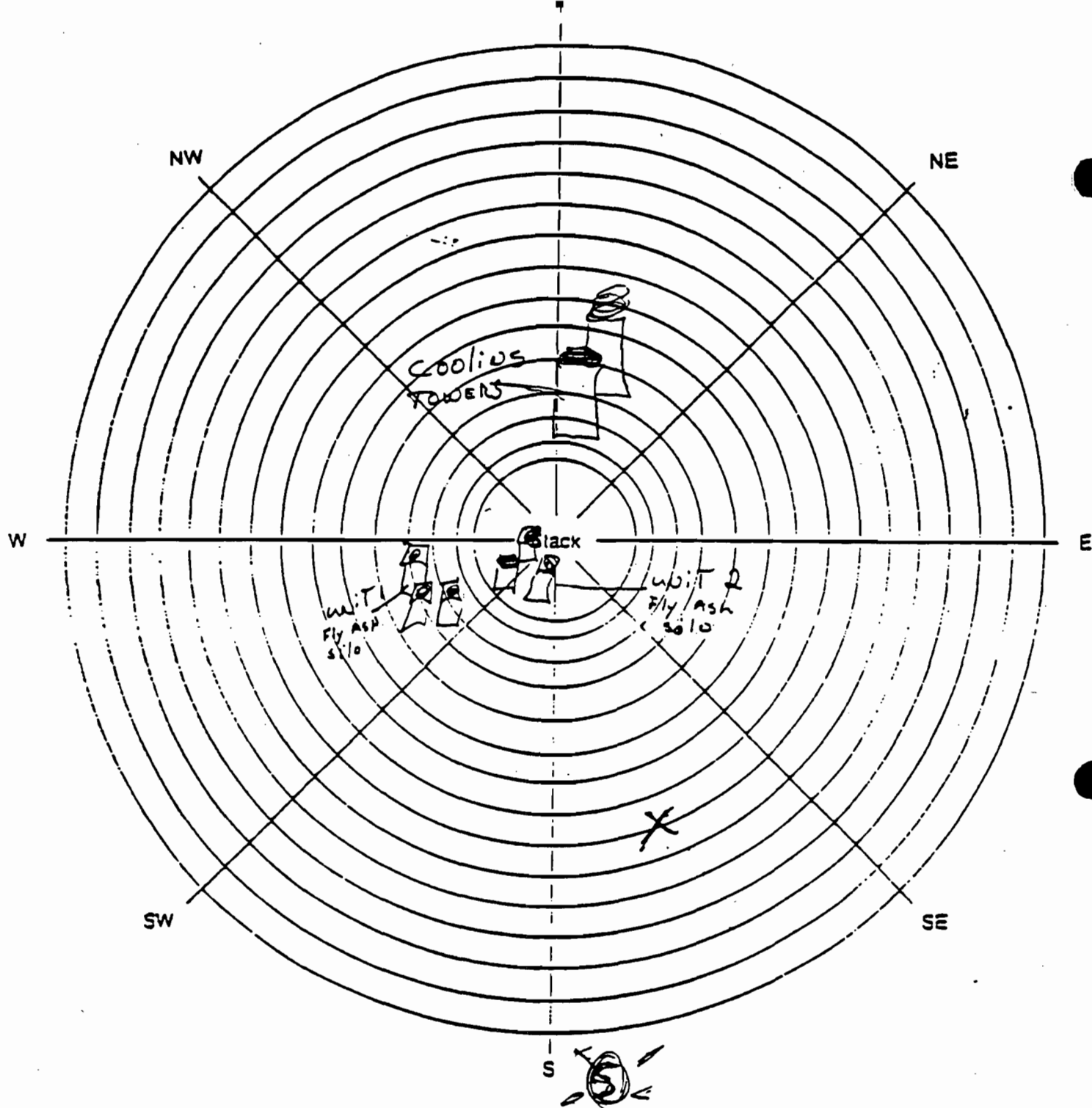
Client J.E.A. Best Available Copy Observer John C Sutton  
 Project No. 97-422 Date 11-4-97  
 Plant Name STARPP Observation began 6:45  
 Location JACKSONVILLE FL. ended 11:45  
 Type of Facility POWER PLANT

| Source Identification<br>(Stack, duct, etc.) | Min. | Seconds |    |    |    | Min. | Seconds |    |    |    |
|----------------------------------------------|------|---------|----|----|----|------|---------|----|----|----|
|                                              |      | 0       | 15 | 30 | 45 |      | 0       | 15 | 30 | 45 |
| <u>Fly Ash Silo (unit 2)</u>                 | 0    | 0       | 0  | 0  | 0  | 30   | 0       | 0  | 0  | 0  |
| <u>NORTH SIDE</u>                            | 1    | 0       | 0  | 0  | 0  | 31   | 0       | 0  | 0  | 0  |
|                                              | 2    | 0       | 0  | 0  | 0  | 32   | 0       | 0  | 0  | 0  |
|                                              | 3    | 0       | 0  | 0  | 0  | 33   | 0       | 0  | 0  | 0  |
| Observer Location                            | 4    | 0       | 0  | 0  | 0  | 34   | 0       | 0  | 0  | 0  |
| (Diagram on back of sheet)                   | 5    | 0       | 0  | 0  | 0  | 35   | 0       | 0  | 0  | 0  |
| Distance from Observer to source <u>225'</u> | 6    | 0       | 0  | 0  | 0  | 36   | 0       | 0  | 0  | 0  |
| Height of Source (above ground) <u>150'</u>  | 7    | 0       | 0  | 0  | 0  | 37   | 0       | 0  | 0  | 0  |
| Weather Conditions                           | 8    | 0       | 0  | 0  | 0  | 38   | 0       | 0  | 0  | 0  |
| Wind Direction <u>SE</u>                     | 9    | 0       | 0  | 0  | 0  | 39   | 0       | 0  | 0  | 0  |
| Wind Speed <u>0-5</u>                        | 10   | 0       | 0  | 0  | 0  | 40   | 0       | 0  | 0  | 0  |
| Temperature <u>65</u>                        | 11   | 0       | 0  | 0  | 0  | 41   | 0       | 0  | 0  | 0  |
| Position of Sun <u>S. EAST</u>               | 12   | 0       | 0  | 0  | 0  | 42   | 0       | 0  | 0  | 0  |
| Sky Condition <u>25% Cloud</u>               | 13   | 0       | 0  | 0  | 0  | 43   | 0       | 0  | 0  | 0  |
| clear, overcast, %clouds.                    | 14   | 0       | 0  | 0  | 0  | 44   | 0       | 0  | 0  | 0  |
| color of clouds, etc.)                       | 15   | 0       | 0  | 0  | 0  | 45   | 0       | 0  | 0  | 0  |
| Plume Description                            | 16   | 0       | 0  | 0  | 0  | 46   | 0       | 0  | 0  | 0  |
| Color <u>W/A</u>                             | 17   | 0       | 0  | 0  | 0  | 47   | 0       | 0  | 0  | 0  |
| Background <u>sky</u>                        | 18   | 0       | 0  | 0  | 0  | 48   | 0       | 0  | 0  | 0  |
| Type (wet or dry) <u>Dry</u> Dist. _____     | 19   | 0       | 0  | 0  | 0  | 49   | 0       | 0  | 0  | 0  |
| Comments                                     | 20   | 0       | 0  | 0  | 0  | 50   | 0       | 0  | 0  | 0  |
|                                              | 21   | 0       | 0  | 0  | 0  | 51   | 0       | 0  | 0  | 0  |
|                                              | 22   | 0       | 0  | 0  | 0  | 52   | 0       | 0  | 0  | 0  |
|                                              | 23   | 0       | 0  | 0  | 0  | 53   | 0       | 0  | 0  | 0  |
|                                              | 24   | 0       | 0  | 0  | 0  | 54   | 0       | 0  | 0  | 0  |
|                                              | 25   | 0       | 0  | 0  | 0  | 55   | 0       | 0  | 0  | 0  |
| Observers Signature                          | 26   | 0       | 0  | 0  | 0  | 56   | 0       | 0  | 0  | 0  |
| <u>John C Sutton</u>                         | 27   | 0       | 0  | 0  | 0  | 57   | 0       | 0  | 0  | 0  |
| Date of Last EPA Method 9 Examination        | 28   | 0       | 0  | 0  | 0  | 58   | 0       | 0  | 0  | 0  |
| <u>OCTOBER 1997</u>                          | 29   | 0       | 0  | 0  | 0  | 59   | 0       | 0  | 0  | 0  |
| Examination Passed in EPA Region             |      |         |    |    |    |      |         |    |    |    |
| <u>AKRON OH</u>                              |      |         |    |    |    |      |         |    |    |    |

Distance (ft.) from plume outlet to point in plume where observations made



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 Total Source Analysis, Inc.  
 Environmental Testing Consultants



LOCATE THE FOLLOWING ON THE DIAGRAM

1. The stack configuration with the stack under observation in the center
2. Observer's position using X to indicate position.
3. Arrow pointing direction wind is blowing.
4. Dotted line between observer and plume indicating observers line of sight when making readings.
5. Circle with S in center to indicate sun location.
6. Any large structures or significant topographical features.

NOTE: Stack configuration is not proportional to distances in feet from stack in the diagram.



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Environmental Testing Corporation  
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**EMISSIONS UNIT EU054**  
**Saleable Ash Silos (1A, 1B, 2A & 2B)**

**ATTACHMENT EU054-05**  
**Emissions Estimates**

**Foster Wheeler Environmental Corporation**  
**EXCEL 7.0 Worksheet Calculation**

**By:** D. Graziani, P.E.

**Date:** 11/3/98

**Ckd. By:** Kim Evans, P.E.

**Date:** 11/10/98

**Cal. No.:** 901103DJG69

**Project No.:** 7830.0020.0056

**Revision No.:** 1

**Project:** St. Johns River Power Park PSD Permit Update

**Subject:** Emissions Estimates for Pneumatic Transfer Systems

Emissions for the silos are based on a pneumatic Transfer Emission Factor of 0.27 lb/ton (Cement Transfer)

| Silo                    | Transfer Rate<br>(TPH) | Emission Factor<br>(lb/ton) |        |
|-------------------------|------------------------|-----------------------------|--------|
| Unit 1 Non-Saleable Ash | 12.5                   | 0.27                        | lb/ton |
| Unit 1 Saleable Ash 1A  | 25                     | 0.27                        | lb/ton |
| Unit 1 Saleable Ash 1B  | 25                     | 0.27                        | lb/ton |
| Unit 2 Non-Saleable Ash | 12.5                   | 0.27                        | lb/ton |
| Unit 2 Saleable Ash 2A  | 25                     | 0.27                        | lb/ton |
| Unit 2 Saleable Ash 2B  | 25                     | 0.27                        | lb/ton |
| Quick Lime Silo         | 400.0                  | 0.27                        | lb/ton |

**Control Efficiency (%)**      99.50%

| Silo                    | Emissions - Uncontrolled |       |       | Emissions - Controlled |       |        |
|-------------------------|--------------------------|-------|-------|------------------------|-------|--------|
|                         | lb/hr                    | tpy   | g/s   | lb/hr                  | tpy   | g/s    |
| Unit 1 Non-Saleable Ash | 3.375                    | 0.616 | 0.043 | 0.017                  | 0.074 | 0.0021 |
| Unit 1 Saleable Ash 1A  | 6.750                    | 1.232 | 0.085 | 0.034                  | 0.148 | 0.0043 |
| Unit 1 Saleable Ash 1B  | 6.750                    | 1.232 | 0.085 | 0.034                  | 0.148 | 0.0043 |
| Unit 2 Non-Saleable Ash | 3.375                    | 0.616 | 0.043 | 0.017                  | 0.074 | 0.0021 |
| Unit 2 Saleable Ash 2A  | 6.750                    | 1.232 | 0.085 | 0.034                  | 0.148 | 0.0043 |
| Unit 2 Saleable Ash 2B  | 6.750                    | 1.232 | 0.085 | 0.034                  | 0.148 | 0.0043 |
| Quick Lime Silo         | 4.500                    | 0.821 | 0.057 | 0.023                  | 0.099 | 0.0028 |

**References:**

AP42 Section 11.2 Concrete Batching  
Flows - Vendor Data