



United States Department of the Interior



FISH AND WILDLIFE SERVICE
75 Spring Street, S.W.
Atlanta, Georgia
30303

February 2, 1993

Mr. C. H. Fancy
Chief, Bureau of Air Regulation
Florida Department of
Environmental Regulation
Twin Towers Office Building
2600 Blair Stone Road
Tallahassee, Florida 32399-2400

Dear Mr. Fancy:

Please remove and replace from your files our letter dated January 26, 1993, with the following corrected letter. This letter provides the Service's comments on the Kissimmee Utility Authority (KUA) permit application for the proposed Kissimmee Cane Island combustion turbines project. The enclosed version does not substantively change our previous comments, but is necessary to correct errors which developed in the computer scanning process used to develop the letter. These single character errors were not caught in our internal review process. Please accept our apology for any inconvenience this may cause.

Sincerely yours,

Harold W. Benson
Acting Regional Director

Enclosure

RECEIVED

FEB 09 1993

Division of Air
Resources Management



United States Department of the Interior



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Dear Mr. Fancy:

We have completed our review of Kissimmee Utility Authority's (KUA) permit application for the proposed Kissimmee Cane Island combustion turbines project in Intercession City, Florida. The KUA facility would be located 115 km east of the Chassahowitzka Wilderness Area (WA), a Class I air quality area administered by the Fish and Wildlife Service. Our comments on the control technology, modeling, and air quality related values analyses are discussed below. We ask that you consider these comments before making a final determination on the KUA permit.

Control Technology Analysis

The proposed facility would be a significant emitter of nitrogen oxides (NO_x), sulfur dioxide (SO_2), carbon monoxide (CO), particulate matter (PM), sulfuric acid mist (H_2SO_4), and beryllium (Be). KUA proposes to minimize emissions from the turbines by using proper combustion controls, burning low sulfur fuel (gas as the primary fuel and oil with a maximum sulfur content of 0.05 percent as the backup fuel), and use of water injection and low- NO_x burners. We agree that proper combustion controls and burning a low sulfur fuel are best available control technology (BACT) for PM, Be, CO, SO_2 , and H_2SO_4 . Regarding NO_x , we still believe that either water injection in combination with Selective Catalytic Reduction (SCR), or dry low- NO_x combustors is BACT for new combined cycle combustion turbine projects. Dry low- NO_x combustors can reduce NO_x levels to less than 15 parts per million (ppm) when firing natural gas, while SCR can achieve flue gas NO_x concentrations as low as 6 ppm when burning gas and 9 ppm when burning oil. In fact, it is also our understanding that General Electric is developing processes, using either steam/water injection or dry-low NO_x combustor technology to achieve a NO_x control level of 9 ppm when firing natural gas. Therefore, we do not object to the Florida Department of

Environmental Regulation (FDER) allowing KUA to emit at the 25 ppm NO_x rate while General Electric develops dry low-NO_x combustors and/or other NO_x reduction processes for the proposed turbines. This is conditional on KUA installing SCR technology on the combined cycle turbine if they can not at least meet the 15 ppm rate by December 31, 1997. Finally, the FDER's BACT analysis and the draft permit appear to be inconsistent with respect to specifying even lower emission levels. The FDER states on page 9 of their BACT analysis, "For both turbines when the manufacturer achieves an even lower NO_x emission level than 15 (gas)/42 (oil) ppmvd, this level would become a condition of this permit." However, the specific conditions in the draft permit do not include such a provision. In order to be consistent with the conclusions of the BACT analysis, the FDER should revise the specific conditions to include the statement that the FDER may revise and lower the allowable BACT limit to less than 15 ppm if such a lower rate is achievable.

Modeling Analysis

In addressing the Class I SO₂ and NO₂ increments, KUA modeled its impact at the Chassahowitzka WA with the EPA MESOPUFF II model, using one year of meteorological data (1986) with surface data from Tampa, Orlando, and Gainesville, and upper air data from Ruskin, Florida. For the SO₂ analysis, KUA initially modeled assuming a worst-case emission rate based on firing 0.3% sulfur oil. For the 3-hour and 24-hour averaging periods, the MESOPUFF II modeling indicates that the KUA facility would significantly consume SO₂ increment (i.e., having an impact greater than 0.48 ug/m₃ and 0.07 ug/m₃, respectively) at the Chassahowitzka WA. For the 24-hour averaging period, KUA would significantly impact the Chassahowitzka WA for 53 days. Therefore, KUA performed a cumulative MESOPUFF II modeling analysis to assess whether it contributed significantly to a Class I increment violation. The cumulative modeling analysis modeled 98 sources defined in the FDER's Class I PSD inventory. The cumulative MESOPUFF II analysis indicated that KUA would significantly contribute to one Class I increment violation. Therefore, the KUA facility has agreed to limit the sulfur content of its fuel oil to 0.05%, thereby eliminating any significant increment consumption at the Chassahowitzka WA for both the 3-hour and 24-hour averaging periods. KUA calculated the annual SO₂ impact using the ISCST model and 1 year of 1986 data. The modeling indicates that based on a fuel oil sulfur content of 0.05%, KUA's impact would be below the significant impact level of 0.025 ug/M₃ for the annual average for SO₂.

The MESOPUFF II model was used to calculate the annual impact for NO₂. The modeling results indicate that KUA's impact will be greater than the significant level of 0.025 ug/m₃, with an annual impact of 0.12 ug/m₃.

KUA performed a visibility modeling analysis for the Chassahowitzka WA using the EPA VISCREEN model. The KUA facility passed the Level I VISCREEN analysis, and therefore, is not expected to cause visible plume impacts at Chassahowitzka WA.

Air Quality Related Values Analysis

KUA sufficiently addressed potential impacts to vegetation, soils, terrestrial wildlife, and visibility in the Chassahowitzka WA from the proposed emissions. However, KUA failed to assess the potential effects on freshwater wetlands and related wildlife in the Chassahowitzka WA from sulfate deposition. These wetlands have a thin veneer of organic soil over a porous limestone base. As precipitation containing sulfate percolates through the soil, the organic matter in the soil may be oxidized. Such oxidation could cause erosion of the thin soil veneer. Many types of vegetation and invertebrates depend upon this veneer, and its loss would seriously alter and impair the function of the wetland ecosystem.

We are also concerned about the effect of nitrate deposition on the saltwater habitat of Chassahowitzka WA. Nitrogen has been found to be the critical limiting nutrient to algal growth and eutrophication in coastal marine waters. Nitrogen enrichment has led to nuisance algal blooms; subsequent algal die-off can result in depleted dissolved oxygen concentrations in the water. In addition, algal blooms increase the turbidity of the water, decreasing light levels to rooted aquatic plants. Shallow coastal waters are particularly vulnerable to this process. Such changes in the patterns and magnitudes of phytoplankton production, changes in the production of rooted aquatic macrophytes, and changes in concentrations of dissolved oxygen can lead to alterations in the entire food web.


Atmospheric deposition of nitrogen, in the form of nitrates from emissions of nitrogen oxides, has been shown to be a significant source of nitrogen loading to coastal marine ecosystems, notably the Chesapeake Bay. Recently, atmospheric deposition of nitrogen to the Apalachicola River watershed in northern Florida was found to be sufficient to account for essentially all the dissolved nitrate and ammonium and total organic nitrogen flow in the river. The Apalachicola River empties into the Apalachicola Bay, where it is likely that these nitrogen compounds cause nutrient enrichment of the phytoplankton, with its associated problems of turbidity and decreased dissolved oxygen. Similar processes may be occurring in the Chassahowitzka WA ecosystem.

We do not expect KUA to quantify, or evaluate the impacts of, sulfate and nitrate deposition in the Chassahowitzka WA. However, in the near future, the Interagency Working Group on Air Quality Modeling (IWAQM) will be releasing the revised MESOPUFF II model. This version will have the capability to calculate

nitrate and sulfate deposition mass, as well as ground level concentrations. At that time, we will request that new sources which have a significant concentration impact in a Class I area perform cumulative modeling analyses to calculate both deposition and concentration at the respective Class I areas. In addition, such sources will be expected to perform an Air Quality Related Values Analysis based on the results of the deposition modeling. Applicants can contact our Air Quality office in Denver for guidance on the deposition modeling.

We appreciate your continued cooperation in requiring applicants to adequately assess the impacts of new emissions on the resources in our Class I areas. If you have any questions regarding this matter, please contact Ellen Porter of our Air Quality Branch office in Denver at 303/969-2071.

Sincerely yours,


Harold W. Benson
Acting Regional Director

cc: J. Neer
C. Holladay
C. Collins, & Dist
J. Harper, EPA
D. Zefebure, B&U



U.S. Fish and Wildlife Service
Division of Refuges and Wildlife, Southeast Region



Phone: (404) 331-0830
FTS 341-0830

75 Spring Street, Room 1240
Atlanta, GA 30303

FAX (404) 730-2023
FTS 880-2023

Date: January 26, 1993

To: C.H. Fancy, Florida Department of
Environmental Regulation

FAX 904 922-
6979

From: Sarah Bridges, USFWS (WTH), Atlanta

Subject: Kissimmee Utility Authority

Number Of Pages To Follow: 4

Remarks: We are trying to get a copy of this
letter with James Pulliam's signature
sent to you by close-of-business today. We
want you to have this ~~advance copy~~
for your use.

Thank you for permitting us to
be so very late with the submission.

Signed letter attached



United States Department of the Interior



FISH AND WILDLIFE SERVICE
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Atlanta, Georgia
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January 26, 1993

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Mr. C. H. Fancy
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Twin Towers Office Building
2600 Blair Stone Road
Tallahassee, Florida 32399-2400

JAN 29 1993

Division of Air
Resources Management

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Sincerely yours,



James W. Pulliam, Jr.
Regional Director

cc:

Jewell Harper, Chief
Air Enforcement Branch
Air, Pesticides and Toxic Management Division
U.S. EPA, Region 4
345 Courtland Street, NE.
Atlanta, GA 30365

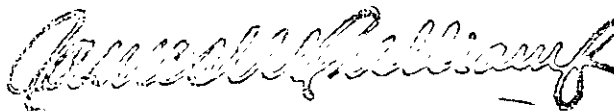
bcc:

FWS-REG. 4: AQC
FWS-REG. 6: Ty Berry
CHAS: Refuge Manager
AQD-DEN: Ellen Porter
National Park Service - AIR
P.O. Box 25287
Denver, CO 80225

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Sincerely yours,

A handwritten signature in cursive script, appearing to read "James W. Pulliam, Jr.", with a long horizontal flourish extending to the right.

James W. Pulliam, Jr.
Regional Director