

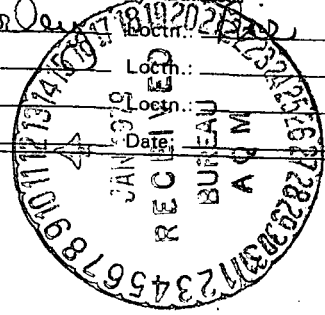
State of Florida

DEPARTMENT OF ENVIRONMENTAL REGULATION

INTEROFFICE MEMORANDUM

For Routing To District Offices
And/Or To Other Than The Addressee

To: *Mike Harold* Locn.: _____
To: _____ Locn.: _____
To: _____ Locn.: _____
From: _____ Date: _____



TO: Power Plant Siting Review Committee

FROM: ^{KAR} Karen A. Reynolds, Power Plant Siting Section

DATE: January 11, 1979

SUBJECT: Pinellas County Resource Recovery Facility

This is to remind you that comments relating to the insufficiency of information supplied by the applicant, have been due for some time now. We would appreciate your assessment of sufficiency, of the application and if possible, for comments on the project as a whole. We would like to have a departmental recommendation available for review by sometime in late February. We prefer to shorten the time frame for processing the application of these small multi-purpose facilities from that given the large units, and would hope to have a staff report and conditions of certification by February 10.

Your continued cooperation is appreciated. Enclosed for your information, is a copy of this office's initial insufficiency remarks to the Hearing Officer, and the applicant's response.

KAR/mk
Enclosure



STATE OF FLORIDA
DEPARTMENT OF ENVIRONMENTAL REGULATION

2600 BLAIR STONE ROAD
TWIN TOWERS OFFICE BUILDING
TALLAHASSEE, FLORIDA 32301

FELIX W. D. ASKEW
GOVERNOR

JOSEPH W. LANDERS, JR.
SECRETARY

November 8, 1978

Received DER

Chris H. Bentley —
Hearing Officer —
Division of Administrative
Hearings
Room 530, Carlton Building
Tallahassee, Florida 32304

DEC 11 1978

NOV 13 78 PCH

P.P.S



Re: Pinellas County Resource Recovery Project,
Power Plant Site Certification
Application PA 78-11

Dear Mr. Bentley:

DEPARTMENT OF PUBLIC
WORKS & ENGINEERING

Pursuant to Section 403.5065(2), Florida Statutes, the Department of Environmental Regulation has reviewed the application for site certification, as submitted by Pinellas County for a steam-electric generating resource recovery project. The department has found the application to be complete as of October 31, 1978.

The department has noted the following areas of insufficiency pursuant to Section 17-17.20, Florida Administrative Code:

1. Sections 5.1.7, 5.2.2 and Appendix B discuss deposition of cooling tower drift, but they fail to discuss the impacts of the drift.
2. Section 5.2.1 discusses discharge of industrial type wastes, but fails to discuss compliance with pre-treatment standards pursuant to 40 CFR Part 423.16.
3. The U.S.G.S. report on water monitoring should be provided including sampling, frequency, methodology and calibration as required by Chapter 6.
4. Without confirmatory borings, what assurance is there that the geology of the site is comparable to the Toytown landfill.

Chris H. Bentley
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5. If noise surveys have not been conducted at the site, how can one be sure what existing background conditions are?
- ✓ 6. Section 6.3.8 addresses ambient air quality monitoring. No attempt was made to discuss stack monitoring.
7. Since no on-site survey for archaeological sites was done, how can one be sure that no culturally or historically significant area will not be encountered?
- ✓ 8. In determining the costs and benefits of the facility, what is the value of land not consumed by landfilling operations if the facility is approved?
- ✓ 9. In considering plant design alternatives
 - a. What were the alternative designs proposed and their costs?
 - b. What were the alternative cooling systems that were evaluated?
 - c. What were the alternative chemical wastewater treatment systems that have been evaluated?

As the department makes a more thorough review, additional areas of insufficiency may be noted.

Sincerely,

Hamilton S. Oven, Jr.
Hamilton S. Oven, Jr., P.E.
Administrator, Power Plant
Siting

HSOjr/mk

cc: Sheri Smallwood
Larry Keeseey
Barrett Johnson
L. M. Blain
D. F. Acenbrack
W. Gray Dunlop

1. Impacts of cooling tower drift

Treated domestic wastewater will constitute the major volume of cooling tower makeup water; as discussed in Section 5.1.1., water may be withdrawn from the retention pond located south of 110th Avenue during overflow periods. Nonetheless, assuming that usage of the treated effluent will predominate, the implications of entrainment and drift of cooling water constituents present potential adverse impacts to a limited area downwind of the tower vent. Specifically, untoward conditions center on the dispersal and subsequent deposition of biological pathogens transmitted within the drift stream. While studies of this topic are limited, some data are available regarding the aerosolization of bacteria from cooling towers which employ treated wastewater as makeup water; studies of viral infectants, however, are lacking.

The most recent documentation of this phenomenon is presented in a paper by A.P. Adams, M. Garbett, H.B. Rees and B.G. Lewis ("Bacterial Aerosols from Cooling Towers", Jour. Water Poll. Control Fed. October 1978); discussions of the potential for pathogenic bacteria within the entrained drift, and the effects of gaseous chlorine versus chlorine dioxide effluent treatment in reducing bacterial populations are enclosed therein. Essentially, it was concluded that following chlorine dioxide treatment, bacterial concentrations within the cooling tower makeup water were so drastically reduced that adverse impacts to downwind sites from enteric organisms were deemed negligent. Without such chlorination, however, bacterial concentrations would be substantially higher. It was further postulated that the probability for containment of many (i.e., more than one) bacteria cells increases with the size of the entrained water droplet. Thus the potential for transport of enteric bacteria is greatest with the heavier particles which precipitate closest to the emission source. Furthermore, it was stated that three key factors most greatly influence bacterial concentrations in the cooling tower drift: the number of bacteria in the cooling tower influent, the sensitivity of individual species to aerosolization, and the concentration of bacteria in the ambient atmosphere. This latter factor appears to be of major consequence. Based on presented data atmospheric bacterial concentrations are quite significant and approximate those levels observed in the cooling tower drift; few intestinal organisms, however, are reported in the ambient air.

Given that most bacteria will be associated with larger droplets that settle close to the emission source (i.e. ¼0.5 Km.), and that ambient air concentrations may be of adequate significance so as to "mask" cooling tower organisms, adverse impacts imparted to the nearest residences, situated 1.31 Km. southwest of the proposed plant, will probably be minimal. The fine aerosol mists which may persist at such distances (10 to 15% of the total drift) will contain far less bacteria than those larger particles which settle close to the emission source. This is due not only to the physical characteristics of the droplet (i.e. larger particle greater numbers of bacteria cells), but also to the viability decay of the organisms with distance, especially in the presence of ultraviolet light (i.e. sunlight).

The chemical characteristics of the treated effluent to be utilized for cooling water are presented as Table 3.4.2.a. in the application. As this water was originally slated for spray irrigation on a public golf course, extensive chlorination precedes utilization. Therefore, it is projected that the potential for habitation of this cooling water by pathogenic bacteria are minimal. Statements concerning viral constituents cannot be proposed as research in that area is scanty.

2. Compliance with 40 CFR Part 423.16

Exact quantification of heat, free available chlorine and total residual chlorine in plant discharges to sanitary systems is not presently available. It is estimated that the major portion of the discharges will originate from cooling tower blowdown (316 GPM Average). However, as

there are no limitations in pretreatment standards for each of the above cited parameters, the proposed facility is in compliance with 40 CFR Part 423.16.

3. USGS Report on the proposed facility site

The referenced report is contained as Attachment 1 to this document.

4. Confirmatory borings

See number 3, above.

5. Noise survey

The Pinellas County Department of Environment Management conducted a noise survey of the proposed facility site. Measurements were made with a Metrosonics db 602 sound level analyzer equipped with digital printer. Although all levels of noise were recorded (as well as the amount of time spent at each level) only the arithmetic average (Leq), the level exceeded 50% of the time (L50), and the level exceeded 10% of the time (L10) are submitted here. Attachment 2 to this document identifies the locations of the sampling sites.

TIME	LOCATION	Leq	L50	L10	TIME PERIOD
1100-1200	1,300' SW of plant	56	53	58	20 minutes
1135-1155	800' SE of plant	61	52	63	20 minutes
1210-1230	2,700' NW of plant	58	51	58	20 minutes
1245-1305	2,800' W of plant	56	51	59	20 minutes
1320-1340	3,100' S of plant	53	50	53	20 minutes

By these data it is apparent that those values calculated and employed in Chapters 4 and 5 of the Power Plant Application are conservative but still quite plausible.

6. Stack monitoring

Current Federal and State Regulations contain standards for maximum allowable particulate emissions (i.e. 0.08 Gr/DSCF corrected to 50% excess air). Requirements for stack monitoring will be met by installing an on-stack transmissometer (e.g. the Lear-Siegler RM-4) to monitor particulate emissions as correlated to optical density.

7. Archaeological sampling

An on-site archaeological survey is currently being conducted by a local archaeological society; the results of this survey will be correlated to those remarks provided by the Division of Archives, History and Records Management, featured as Appendix E of the application, and presented to the DER.

8. Cost benefits

A direct calculation of land not consumed was not made in determining the cost benefits of selecting the resource recovery facility. Rather, the annual cost (in specific year dollars) was calculated for each system and the 20 year totals compared for project cost differences.

The cost for the resource recovery facility was obtained from a life cycle analysis computer run which assumes a projected tonnage throughput and Florida Power Corporation's estimated electrical rates.

The cost for landfilling in future years was estimated by employing the following criteria:

- a. \$4.50 contractor fee escalated at 6% per annum
- b. \$.885 per ton = land cost escalated at 6% per annum; this value is calculated by using the following assumptions:
 1. present land cost = \$15,000 per acre
 2. compaction density = 700 cubic yards
 3. total depth of fill = 10 yards

Thus the total 20 year cost for operation of the resource recovery facility is \$119,880,700; the cost of landfill operation over the same time period is \$149,343,000 yielding a cost benefit of the resource recovery option of \$29,462,000. Chapter 7 of the application elaborates on the other benefits associated with facility construction and operation.

9. Design alternatives

During the procurement procedure plant design alternatives were considered for each company submitting a proposal to Pinellas County. A copy of the subsequent evaluation of these proposals ("Pinellas County Proposal Evaluation") is attached for further reference.

a. Below are listed the design alternatives proposed, the company making the proposal, the type technology featured and the proposal price. Further information can be obtained from the attached proposal evaluation.

COMPANY	TECHNOLOGY OFFERED	PROPOSAL COST
Combustion Engineering (Base)	Prepared refuse incineration/electrical generation	\$70,300,000
Combustion Engineering (Alternate)	Prepared refuse incineration/electrical generation	\$88,927,000
CEA	Preparation of fuel	Financing by CEA
Grumman	Mass incineration/electrical generation	\$79,900,000
Union Carbide	Preparation of synthetic gas	\$106,074,700
UOP (2 units)	Mass incineration/electrical generation	\$44,880,000
UOP (3 units)	Mass incineration/electrical generation	\$48,395,000
Wheelerbrator-Frye	Mass incineration/electrical generation	\$70,912,000

b. The only alternative cooling system considered was a wet/dry tower as opposed to the proposed wet cooling tower. Analysis showed that a capital cost of \$1,050,000 would be associated with such an option. A final decision on this matter has not been reached at this time. Design provisions are being made to accommodate the wet/dry option at a later date. No water source options were considered in any detail since the Southwest Florida Water Management District indicated during the proposal evaluations that there would be no chance of obtaining a consumptive use permit. Also, the candidate site near Tampa Bay, where once-through cooling could be considered, is located in an area heavily infested with mangroves and significantly low enough to cause the possibility of increased costs to site encroachments. Further detail on cooling water design options as proposed to Pinellas County are presented in the attached "Pinellas County Proposal Evaluation".

c. Again, consult the attached proposal evaluation. Regarding the UOP design, no alternative wastewater treatment systems were considered by the County for that facility.