

RULES AND DIRECTIVES
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U.S. Nuclear Regulatory Commission
Chief, Rules and Directives Branch
Division of Administrative Services
Office of Administration
Mail Stop: TWB-05-B01M
Washington, D.C., 20555-0001

8/13/2010

75 FR 49509

(7)

Attention: Douglas Bruner

RE: Levy County Nuclear Power Plant Discharge into Existing Florida Barge Canal

Dear Mr. Bruner:

One of the greatest mistakes in water management/hydrology engineering history occurred when in 1935 funding was provided by the Emergency Relief Act of 1935 to create a navigable canal between the Gulf of Mexico and the Atlantic Ocean. Due to unavailable technology data at that time, the disastrous effect caused by construction of the Florida Barge canal to the existing aquifer system could not be fully examined or its effects determined. As you may be aware, the main problem caused by the construction of the barge canal has been the intrusion of saltwater into the underlying aquifer system. When construction first started in 1964 and was finally halted in 1971 due to a court injunction because of this saltwater intrusion the damage has already been done. Since that time the Florida Barge Canal has been a black eye to both the federal government, engineers and the surrounding area.

While reviewing the submitted NRC application as submitted by Progress Energy for the Levy County Nuclear Power Plant, I noticed the discharge point for the new nuclear plant facility would occur at the existing Crystal River Nuclear Power Plant discharge outlet. I can understand the engineering reasoning behind this decision. As shown on the proposed site plan, the planned discharge pipe would run parallel along the North bank of the barge canal and eventually cross the canal near the canal's entrance at the Gulf of Mexico. The pipe would continue to the existing nuclear power plant facility.

This brings me to the purpose of this letter. This letter is a engineering proposal that is being submitted that should be consider for discharging the nuclear power plant cooling water at a point where the proposed discharge pipe was going to cross the canal. Additionally, next to discharge location, a earth or concrete dam with a lock system would need to be provided on the west side of this discharge outlet. This would create a close system for recycling the cooling water for the new

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add = D. Bruner (dwb1)

nuclear power facility instead of discharging into the Gulf of Mexico. This changes the existing canal into a cooling basin instead.

The advantage of this approach is numerous. First, after installing the dam, the canal becomes a closed recycling water system. By recirculating the water, the concentrating of salt within the canal would eventually be reduced with time since the salt would either be removed mechanically or dissipated by the cooling towers. Since the discharge water will have less salt content than presently exists, it is this engineer's opinion that the existing aquifer will slowly cleanse the underground water system of long accumulating salt which has been depositing continually since the construction of the barge canal.

I have run some preliminary calculations, to determine the estimated cycle time of the water contained in the new formed cooling basin. See Attachment #1 to this letter for a proposed layout of the infrastructure needed as outlined in this letter. The numbers are as follows to determine the estimated recycle time:

With a bottom width of the existing canal at 150 feet and an estimated depth of 12 feet, the average cross section of the existing barge canal is determined to be approximately 2,000 square feet. The separation point between the intake structure and discharge outlet and dam structure would be approximately 4.5 miles long. This creates a volume of stored water of approximately 47.5 billion cubic feet contained within this basin. It is my understanding that the daily flow for use in cooling this nuclear facility is to be 1.85 million gallons per day (247,300 cubic feet). If this is the case, the cycle time for recycling water within this basin would be a total of 192 days. Hopefully, a time period long enough to sufficiently cool the 95 degree discharge water?

By installing this type of cooling water control system, other environmental benefits will also be realized. Since the water level in the basin would be maintained at a constant level rather than fluctuate with the existing tides, the groundwater table elevation inland would be maintained at a constant raised elevation. Another problem which the barge canal created when it was constructed was the reduction of the water depth and quality of water upstream in the Withlatchoochee River. By maintaining a constant higher level in the cooling basin, it is this engineer's opinion, a positive effect will occur to the quality and water level in the Withlatchoochee River west of the spillway.

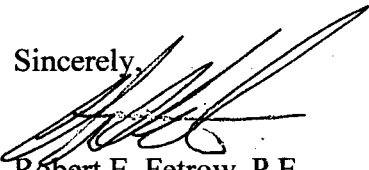
Another benefit the basin could also provided if it is used as a manatee sanctuary area during the winter months since a lock at the dam enable passage to the cooling basin where the water is warmer during winter months. The lock could be open occasionally and be used as a staging area to allow the mammals to enter the basin. The lock could also be used for any barge traffic which needed to enter the basin for the nuclear power plant or other purposes. It also would allow water to be added to the basin if the level became low. I also have shown a pump station as an option rather than using a lock for this purpose.

Another benefit would be the reduction of 2.5 miles of discharge piping along side the Gulf of Mexico. With less piping, the pumping system for the discharge system would need less horsepower therefore providing additional construction cost savings. Also, I believe wetlands presently exist between the existing barge canal and the Crystal River Nuclear Power Plant. By

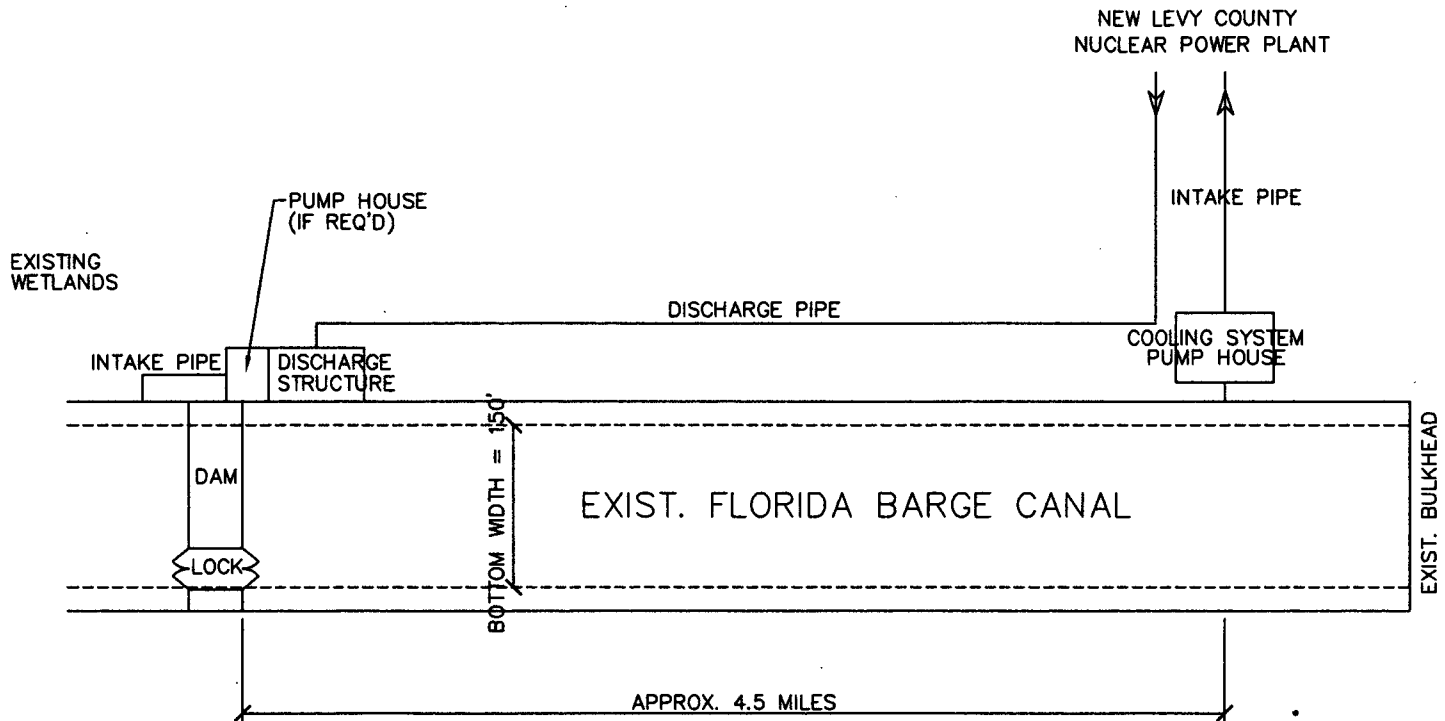
discharging at the end of the canal, these areas would not in danger of being disturbed. They may be other benefits which I am not aware of.

I hope this environmental engineering suggestion will be reviewed by your agency and Progress Energy to determine if this solution is feasible. It should be noted my specialty does not lie in the area of groundwater water systems on the environment. And what positive effects they may have to the aquifer system is unable to be determined without further studies and evaluations. Thank you for your time. If you have any questions or need assistance, please feel free to contact me.

Sincerely,



Robert E. Fetrow, P.E.
P.E. #35867



CONCEPTUAL COOLING BASIN PLAN
NO SCALE

ELIMINATION OF 2.5 MILES
OF DISCHARGE PIPING
TO CRYSTAL RIVER
NUCLEAR POWER PLANT

Handwritten notes and signatures at the top right of the sheet.

GATOR ENGINEERING SERVICES, INC.
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BOYNTON BEACH, FL 33462
PH (352) 601-0768

PROJECT: FLORIDA BARGE CANAL COOLING BASIN
LEVY COUNTY, FL

TITLE: CONCEPTUAL LAYOUT

DRAWN BY: R.E.F. 10/22/90	SCALE:
CHECKED BY: R.E.F. 10/22/90	NOTED:
JOB NUMBER:	
SHEET NUMBER SHEET 1 OF 1	REV. -