

**NRC DISTRIBUTION FOR PART 50 DOCKET MATERIAL  
(TEMPORARY FORM)**

CONTROL NO: **9978**  
FILE: **ENVIRO**

FROM: Carolina Power & Light Co Raleigh, N. C. J.A. Jones		DATE OF DOC 9-16-75	DATE REC'D 9-19-75	LTR XXX	TWX	RPT	OTHER
TO: Benard C. Rusche		ORIG 1 Signed	CC	OTHER	SENT NRC PDR <u>XXX</u> SENT LOCAL PDR <u>XXX</u>		
CLASS	UNCLASS XXX	PRÓP INFO	INPUT	NO CYS REC'D 1	DOCKET NO: <b>50-400/401/402/403</b>		
DESCRIPTION: Ltr. trans the following.....				ENCLOSURES: Furnishing Aquatic & Fisheries Studies...Base- line preoperational biological surveys.....W/ Figs. ....  ( 1 cy. Encl. Rec'd) <b>DO NOT REMOVE ACKNOWLEDGED</b>			
PLANT NAME: Sheraton Harris 1-4							

**FOR ACTION/INFORMATION**

VCR 9-23-75

✓ BUTLER (L) W/ Copies	SCHWENCER (L) W/ Copies	ZIEMANN (L) W/ Copies	REGAN (E) W/ Copies	REID (L) W/ COPIES
CLARK (L) W/ Copies	STOLZ (L) W/ Copies	✓ DICKER (E) W/ Copies	LEAR (L) W/ Copies	
PARR (L) W/ Copies	VASSALLO (L) W/ Copies	KNIGHTON (E) W/ Copies	SPIES W/ Copies	
KNIEL (L) W/ Copies	PURPLE (L) W/ Copies	YOUNGBLOOD (E) W/ Copies	LPM <i>J. C. Cutchin: LWR 1-2</i>	

**INTERNAL DISTRIBUTION**

✓ REG. FILE	TECH REVIEW	DENTON	LIC ASST	A/T IND.
✓ NRC PDR	SCHROEDER	✓ GRIMES	R. DIGGS (L)	BRAITMAN
✓ OGC, ROOM P-506A	MACCARY	✓ GAMMILL	H. GEARIN (L)	SALTZMAN
✓ BOSSICK/STAFF	KNIGHT	✓ EASTNER	E. GOULBOURNE (L)	MELTZ
CASE	PAWLICKI	✓ BALLARD	✓ KREUTZER (E)	
GIAMBUSSO	SHAO	SPANGLER	J. LEE (L)	PLANS
BOYD	STELLO		✓ M. RUSHBROOK (L)	MCDONALD
MOORE (L)	HOUSTON	ENVIRO	S. REED (E)	CHAPMAN
✓ DEYOUNG (L)	NOVAK	✓ MULLER	M. SERVICE (L)	DUBE (Ltr)
SKOVHOLT (L)	ROSS	✓ DICKER	S. SHEPPARD (L)	E. COUPE
GOLLER (L) (Ltr)	IPPOLITO	KNIGHTON	M. SLATER (E)	PETERSON
P. COLLINS	TEDESCO	YOUNGBLOOD	H. SMITH (L)	HARTFIELD (2)
DENISE	✓ J. COLLINS	REGAN	S. TEETS (L)	KLECKER
✓ REG OPR	LAINAS	PROJECT LDR	G. WILLIAMS (E)	EISENHUT
FILE & REGION (2)	BENAROYA	✓ <i>Base EP2</i>	V. WILSON (L)	WIGGINTON
MIPC	VOLLMER	HARLESS	R. INGRAM (L)	
			M. DUNCAN (E)	

**EXTERNAL DISTRIBUTION**

✓ 1 - LOCAL PDR <i>Raleigh n.c.</i>	1 - NATIONAL LABS <i>PNWL 10</i>	1 - PDR-SAN/LA/NY
✓ 1 - TIC (ABERNATHY) (1)(2)(10)	1 - W. PENNINGTON, Rm E-201 GT	1 - BROOKHAVEN NAT LAB
✓ 1 - NSIC (BUCHANAN)	1 - CONSULTANTS	✓ 1 - G. ULRIKSON ORNL
1 - ASLB	NEWMARK/BLUME/AGBABIAN	
1 - Newton Anderson		
16 ACRS HOLDING/SENT <i>cat. B.</i>		



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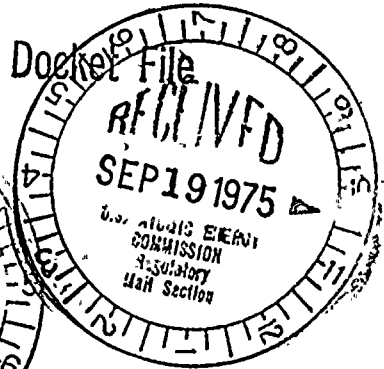
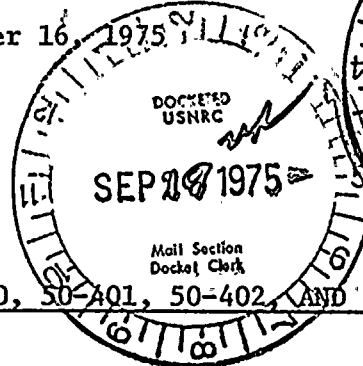
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CP&L Regulatory Docket File  
Carolina Power & Light Company

September 16, 1975

Mr. Benard C. Rusche, Director  
Office of Nuclear Reactor Regulation  
U. S. Nuclear Regulatory Commission  
Washington, D. C. 20555



RE: DOCKET NOS. 50-400, 50-401, 50-402, AND 50-403

Dear Mr. Rusche:

Carolina Power & Light Company has conducted baseline pre-operational biological surveys at the Shearon Harris Nuclear Power Plant site since April, 1972. It is the intent of these surveys to determine the existing aquatic and terrestrial populations of the site prior to construction and operation of the plant, thereby establishing a baseline for comparison with biological survey data that will be taken after the plant begins operation. The pre-operational surveys were initiated on a time schedule consistent with initial operation for the four units in 1977, 1978, 1979, and 1980. Presently the four units are scheduled for commercial operation in 1984, 1986, 1988, and 1990. However, pre-construction and pre-operational baseline studies are still being conducted with the original intensity and schedule. The present studies would provide 12 years of pre-operational baseline data, which is excessive for purposes of establishing such baseline information. Accordingly, we are modifying the pre-operational monitoring program for an interim period until the construction permit is received and construction begins.

The interim study, as presented herein, will provide continuity between the earlier baseline studies and the construction monitoring program. Should significant changes in the biota be realized during the interim, the program could be rapidly expanded to its original scope.

Should you have any questions concerning this modification to the program, please contact the Company's staff.

Yours very truly,

J. A. Jones  
Executive Vice President  
Engineering, Construction & Operation

JAJ/mf



PROPOSED SHNPP AQUATIC FISHERIES AND TERRESTRIAL  
BIOLOGY PRE-IMPOUNDMENT SAMPLING PROGRAM

Baseline biological surveys were initiated at the SHNPP in April, 1972, in anticipation of receiving a Construction Permit in early 1973 and operation of Units 1, 2, 3, and 4 in 1977, 1978, 1979, and 1980, respectively. Presently, Unit 1 is not scheduled for commercial operation until 1984; although, pre-construction and pre-operational baseline studies based on the original schedule are still being conducted. This schedule will provide pre-operational baseline data for 12 years which appears to be quite excessive.

The first three years of study were conducted by Aquatic Control, Inc. In April, 1975, the Environmental Assessment Unit assumed all elements of the study in-house. In view of the recent re-scheduling of the SHNPP, it is felt that the program should be reduced in scope and intensity until the Construction Permit is received and construction begins. An interim study, as presented herein, would provide continuity between the earlier baseline studies and the construction monitoring program. Also, should significant changes in the biota be realized during the interim, the program could be very rapidly expanded to its original scope.



## AQUATIC AND FISHERIES STUDIES

Four river transects have been established on the Cape Fear River and are identified as A, B, C, and D. Along each transect three sampling stations are identified at points which are approximately 10, 50, and 90 percent of the river's width. Additionally, three river stations: R-1, R-2, and R-3, and eight stream stations: BK-2, BK-3, CC-1, LW-8, S-2, S-3, S-5, and S-6 are used (Figure 1).

### WATER QUALITY

WATER CHEMISTRY - Twice yearly (May and November) water chemistry samples are collected from mid-river at river transects A, B, C, and D; from the east bank of river stations R-1, R-2, and R-3; and at stream stations BK-2, BK-3, CC-1, LW-8, S-2, S-3, S-5, and S-6. The following chemical parameters are analyzed:

Total alkalinity	Total polyphosphates
Hardness	Turbidity
Chloride	Total chromium
Sulfate	Hexavalent chromium
Dissolved silica	Total mercury
COD	Total copper
Phenols	Dissolved copper
Total solids	Total iron
Total volatile solids	Total lead
Total suspended solids	Total zinc
Total dissolved solids	Dissolved zinc
Nitrate	Total sodium
Ammonia	Total nickel
Total nitrogen	Dissolved nickel
Total phosphate	Total manganese
Total orthophosphate	Total magnesium
Total dissolved phosphate	Total calcium
Total dissolved orthophosphate	Total aluminum
	Dissolved aluminum

WATER TEMPERATURE, DISSOLVED OXYGEN pH, CONDUCTIVITY, SECCHI DEPTH, AND FLOW - At river transects A, B, C, and D; at the east banks of river stations R-1, R-2, and R-3; at stream stations BK-2, BK-3, CC-1, LW-8, S-2, S-3, S-5, and S-6 and at three confluences with Parker's Creek, Daniel's Creek and Buckhorn Creek, water temperature, dissolved oxygen concentration, pH, conductivity, secchi depth, and flow are recorded twice yearly (May and November) at 1/2 meter intervals from surface to bottom.

### PLANKTON

PERIPHYTON - In May and November periphyton samplers are placed at river transects A, B, C, and D in stations which are 10, 50, and 90 percent of the river's width. Additionally, samples are taken at four stream stations: BK-2, BK-3, CC-1 and LW-8. (Since streams are subject to extreme water level fluctuation [i.e. drought], the method of stream sampling must change accordingly.)

Subsamples from each sampler are placed in Sedgwick-Rafter Counting Chambers, and non-diatoms are counted and identified. Diatoms are observed to determine the proportion of living to dead diatom frustules. Whenever 90% or more are found to be living in the subsample, 2 or 3 slides from the periphyton samplers are cleaned, diatoms from the sample are permanently mounted in Hyrax mounting medium, and short counts consisting of the enumeration of 250-300 diatoms are made.

Data analyses include (1) species lists with relative abundances; (2) statistical analysis for diversity and variance; and (3) identification of pollution indicator species.

PHYTOPLANKTON AND ZOOPLANKTON- Whole water and net samples for phytoplankton and zooplankton are taken at Transect D in areas which are 10, 50, and 90 percent of the river's width. Samples are fixed in the field and returned to the laboratory for analyses to determine (1) species lists and (2) numbers.

All plankton are identified to the lowest taxon practicable, and aliquots of samples are retained for reference.

#### BENTHOS

Twice yearly, in May and November, benthic macroinvertebrates are sampled at river transects A, B, C, and D and at stream stations BK-2, BK-3, CC-1, and LW-8. Artificial substrates are placed at three stations (10%, 50%, and 90% of river's width) along each river transect. Two substrate samples are used at each station.

Material collected from each artificial sampler is preserved in plastic containers with 10% formalin. Organisms are separated from substrate and detritus, enumerated, and identified to lowest taxon practicable. Determination of absolute abundance is made by converting numbers of organisms per sample to number per square meter.

Monthly biomass determinations of selected benthic species are made as follows: samples desiccated at 60°C for 24 hours to constant weight; samples ashed at 600°C for one hour and weighed; and ash free dry weight determined and presented as grams per square meter.

Data analyses include (1) species lists; (2) biomass; (3) relative abundance of dominant species; (4) species diversity; (5) statistical analyses of variances within and among stations.

Representative organisms of sampled macroinvertebrates are retained for reference.

#### FISHERIES

Twice yearly, in May and November, fish are sampled in the areas of river transects A, B-C, and D (Transects B and C are combined into a single sampling area because of their close proximity.), and in the areas of stream stations BK-2, BK-3, CC-1, and LW-8.



Each river transect is sampled by utilizing a boat-mounted electrofisher for a one-hour period and by setting two hoopnets and two wire traps for approximately 48-hour periods (2 nights).

A 100-meter section of each stream station is sampled using a backpack electrofisher. Seines are used to block off the sampling areas. Additionally, stream stations are sampled with cresol (cresylic acid) on an annual basis. At each station, a 100-meter section of stream is blocked off at both the upstream and downstream boundaries. With the backpack electrofisher, a small sample of fish is taken from the blocked-off area, fin clipped and returned. Cresol is then added, and the area is covered with the electrofisher to remove as many remaining fish as possible. The percentage of marked fish recovered will allow estimation of the percentage of the total population recovered.

Fish collected at stream stations are preserved in formalin for processing in the laboratory. Larger specimens of fish collected at river transects are processed in the field, tagged, and released, except for representative samples of the indicator species, (snail bullhead, largemouth bass, and bluegill), which are maintained for age-growth and fecundity studies: Scales (pectoral spines from bullheads) are taken from all specimens for later age-growth analysis.

All fish collected will be identified to species, measured and weighed. Data collected from stream stations will allow estimations of numbers and biomass in the streams. Data from river sampling will allow comparisons of catch/effort among transects, although no estimates of population or biomass can be made.

#### TERRESTRIAL STUDIES

Two wildlife survey routes and four vegetation and small mammal transects (SA-1, SA-2, SA-3, and SA-4) have been established and are identified in Figure 2.

##### MAMMALS

Once quarterly a two-day wildlife survey is conducted using the wildlife survey routes and the vegetation and small mammal transects indicated in Figure 2. Mammals observed are identified and species lists compiled. Additionally, during December a two-day squirrel leaf nest count will be conducted.

##### AVIFAUNA

Once quarterly four avifauna surveys are conducted. Routes used alternate between the wildlife survey routes indicated in Figure 2. Documentation of observations of avifauna is made, and species lists are compiled. Additionally, during the period April to August, quail and dove call counts are conducted along the survey routes.

## VEGETATION

Twice yearly observations of vegetation are made along four transects, SA-1, SA-2, SA-3, and SA-4, identified in Figure 2 and throughout the project area. Specimens are collected, identified, and deposited in a herbarium reference collection. Miscellaneous observations are made and successional changes monitored.



