CP&L
Carolina Power & Light Company

January 12, 1979

FILE: NG-3514(P) SERIAL: GD-79-116

Mr. Harold R. Denton, Director
Office of Nuclear Reactor Regulation
United States Nuclear Regulatory Commission
Washington, D. C. 20555

BRUNSWICK STEAM ELECTRIC PLANT, UNIT NOS. 1 AND 2
DOCKET NOS. 50-325 AND 50-324
LICENSE NOS. DPR-71 AND DPR-62
SEISMIC MONITORING PROGRAM

Dear Mr. Denton:

Since July 1977, the National Oceanic and Atmospheric Administration (NOAA) has been collecting data from the Southport, North Carolina tidal gage station in accordance with the leveling portion of Phase I of Carolina Power & Light Company's "Brunswick Steam Electric Plant Program for Seismic Monitoring" dated June 10, 1975, revised June 27, 1975.

Attached to this letter are five (5) copies of an interpretive report prepared by the National Ocean Survey (NOS) of NOAA based on their data collected at Southport, as well as supportive information from tide gages at other locations. Their conclusion is that the Southport area has been undergoing subsidence for several decades at the same general rate as other East Coast sites. This corroborates the results of the seismic monitoring program which also showed no evidence of any anomalous conditions.

In light of these conclusions, CP&L requests that the NRC staff authorize termination of the leveling portion of Phase I of the "BSEP Program for Seismic Monitoring" dated June 10, 1975, as revised June 27, 1975 (i.e., Appendix A to Amendment No. 3 of License DPR-62). The NRC's authority for taking this action is established in the Facility Operating Licenses, Condition 2.C(3) which states that CP&L would "undertake a program for seismic monitoring for a minimum of two years unless termination is earlier approved by the NRC Staff." It is evident that the original concept of the seismic study would allow for modification to the program as factual information became available. Since the authority to make the requested modification is included in Appendix A to Amendment No. 3, a license amendment is not necessary.

A001 S/1 ADD GEOSCIENCES BR W/ENCL

A P

411 Fayetteville Street • P. O. Box 1551 • Raleigh, N. C. 27602

As stated in our September 21, 1977 letter, the leveling portion of Phase I could be deleted prior to completion of the two-year period if the staff concurs that the tidal data is not indicative of uplift in the Southport area. Since this is the conclusion reached by the National Ocean Survey, we request that you approve termination of the leveling portion of Phase I of our seismic program and that it be effective as soon as possible.

Should you have any questions regarding this request, please contact us.

Yours very truly,

E. E. Utley
Senior Vice President
Power Supply

JAM/mf
Attachment

cc: Mr. Thomas S. Erwin

UNITED STATES DEPARTMENT OF COMMERCE
National Oceanic and Atmospheric Administration
NATIONAL OCEAN SURVEY
Rockville, Md. 20852

C3311/JRH
617-D.0117

October 31, 1978

Mr. Gary Forrest
Carolina Power & Light Company
P.O. Box 1551
Raleigh, North Carolina 27602

Dear Mr. Forrest:

The following is a preliminary NOS report on sea level trends at Southport, North Carolina, 1933-1978:

1. Historical Information

Tidal measurements were made at Southport, North Carolina for 21 years, 1933-1953. Mean sea level values were determined based on the 1941-1959 National Tidal Datum Epoch. The control station used for simultaneous comparison was Charleston, South Carolina.

The plotted curves of monthly and annual sea level show both Southport and Charleston have similar sea level variations, with a slow secular rise in sea level relative to land between 1933-1953 (see Figs. 1 and 2).

II. Reinstallation of Southport Tide Gage

A tide gage was installed by NOS at Southport, North Carolina in 1977, at the request of the North Carolina Power & Light Company.

To date, 10 months of tide record have been tabulated and reduced to mean values based on the 1941-1959 National Tidal Datum Epoch through comparison with the control station at Charleston, South Carolina.

Through differential leveling to existing tidal bench marks and tide staff, a connection was made between the historical tidal series and the latest 1977 information (see Table 2).

III. Conclusion

After comparing the sea level value determined from the 1933-1953 period at Southport with the latest 10 months of record in 1977, and taking into account the $\pm$ 0.1 ft. variability expected from a 10 month tidal series,

we find that no significant change in sea level has taken place during the last 25 years.

This fact is substantiated by similar sea level trends observed at Charleston and other long term control stations along the east coast. Annual sea level curves have been plotted for Boston, Massachusetts; Charleston, South Carolina; and Miami Beach, Florida (see Figs. 3, 4, and 5).

The annual sea level trend at all three stations show a gradual secular rise in sea level relative to land but with a reduced rate of change during recent years (see Fig. 1).

From the tidal information available, it is reasonable to assume that sea level changes at Southport over the last 25 years were generally in the same direction and magnitude as other east coast stations, such as Charleston, South Carolina.

Sea level changes are influenced by many factors but are chiefly due to the combination of eustatic rise (world glacial melting), and local tectonic movement (subsidence or emergence).

At this time, there is no conclusive evidence from our tidal measurements to show any dramatic tectonic changes occurring at the Southport gage site.

Sincerely,

James R. Hubbard

James R. Hubbard
Chief, Tidal Datum Section
Tides and Water Levels Branch
Oceanographic Division

Enclosures


Southport
North Carolina
4.6
4.4
4.2
4.0
3.8
3.6
3.4
MSL(1941-59)
NGVD
Charleston, South Carolina
6.0
5.8
5.6
5.4
5.2
5.0
4.8
4.6
MSL(1941-59)
NGVD

Fig 1

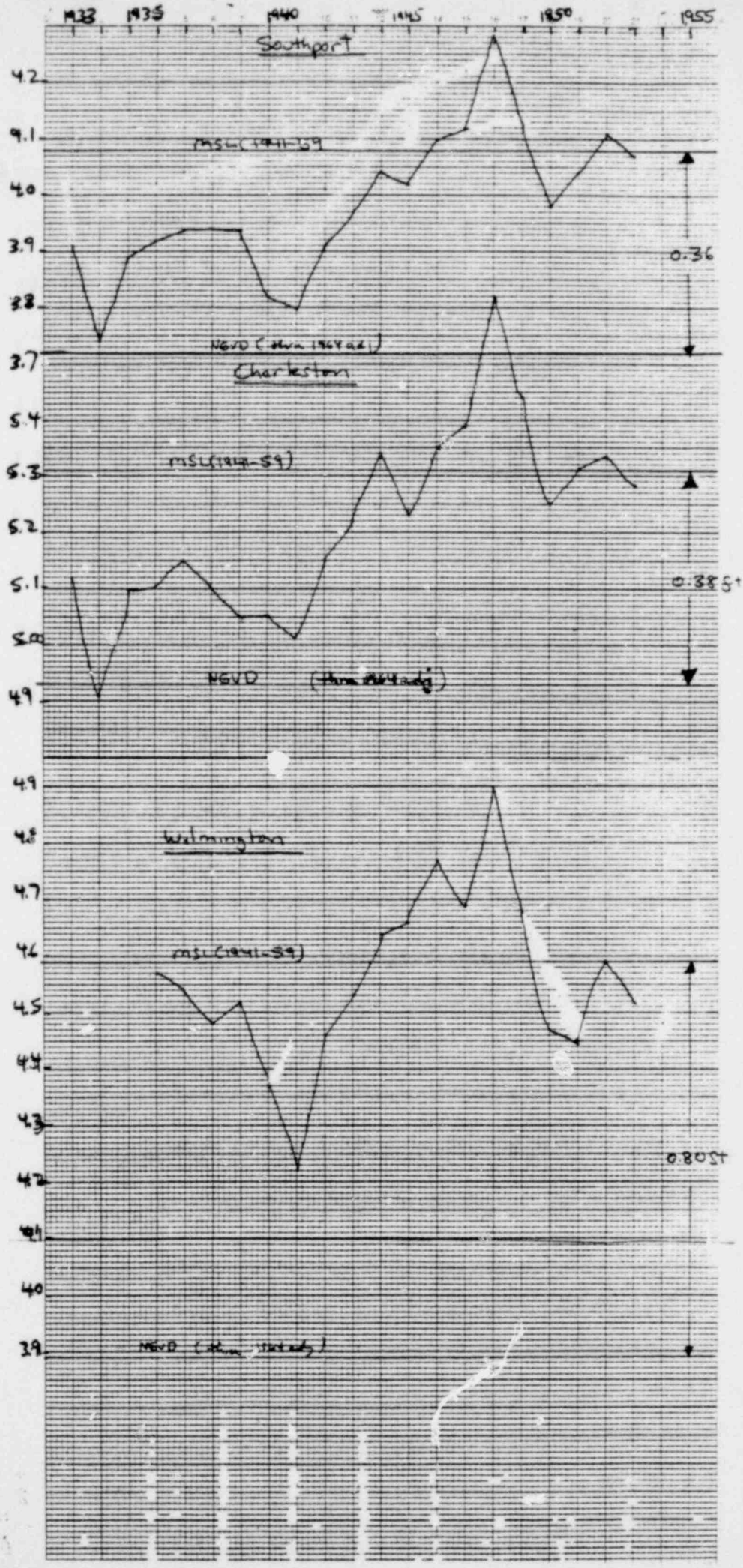
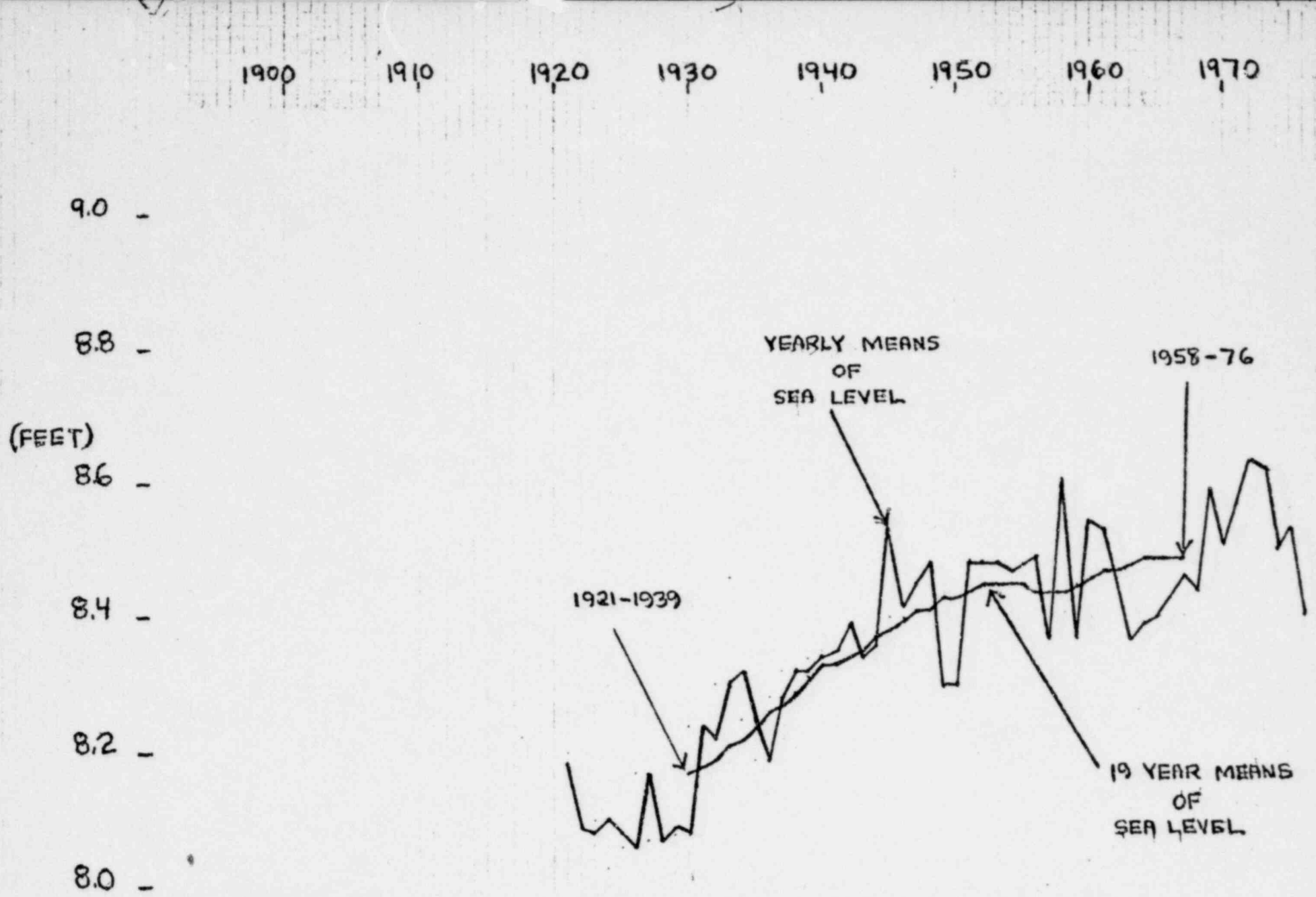

1935
1940
1945
1950
1955
Southport
4.2
4.1
4.0
3.9
3.8
3.7
MSL (1941-59)
0.36
NGVD (adj. 1964)
Charleston
5.4
5.3
5.2
5.1
5.0
4.9
MSL (1941-59)
0.38 ft
NGVD (adj. 1964)
Wilmington
4.9
4.8
4.7
4.6
4.5
4.4
4.3
4.2
4.1
4.0
3.9
MSL (1941-59)
0.80 ft
NGVD (adj. 1964)

Figure 2



SEA LEVEL CURVE BOSTON 1921- 1975

Figure 3

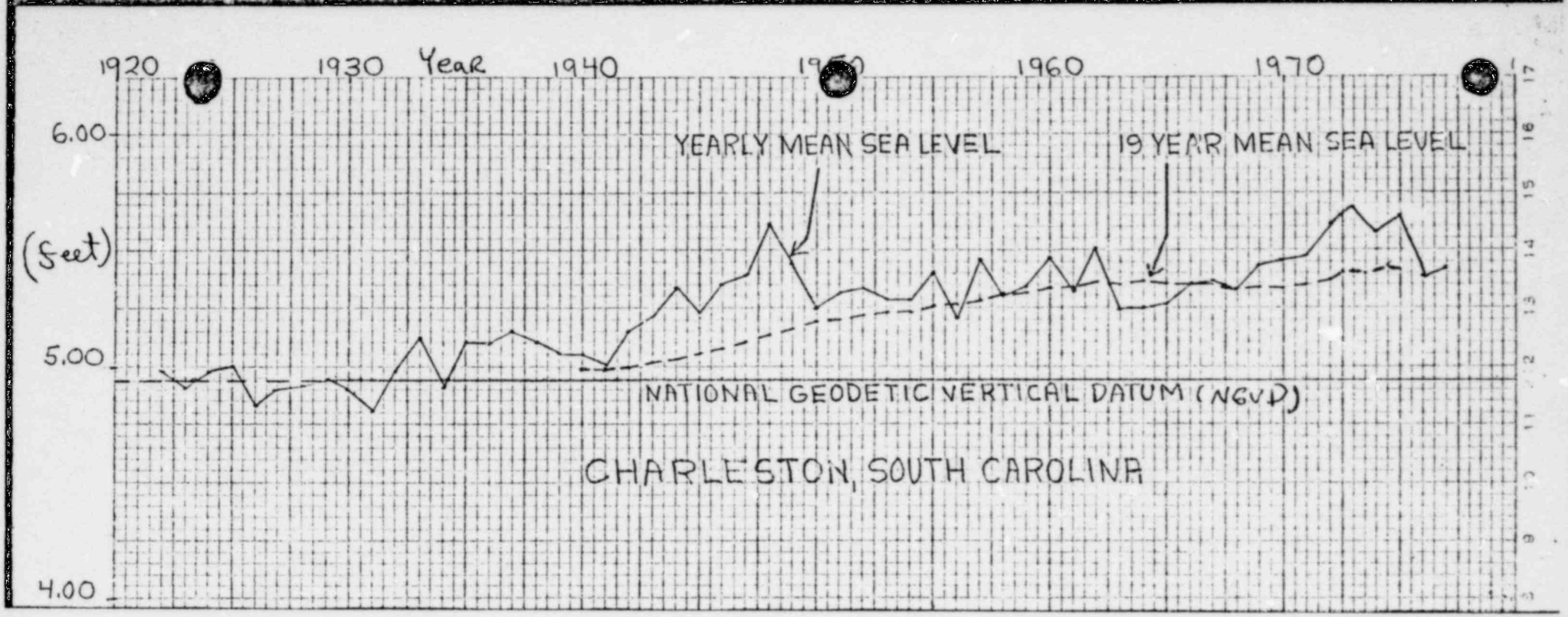
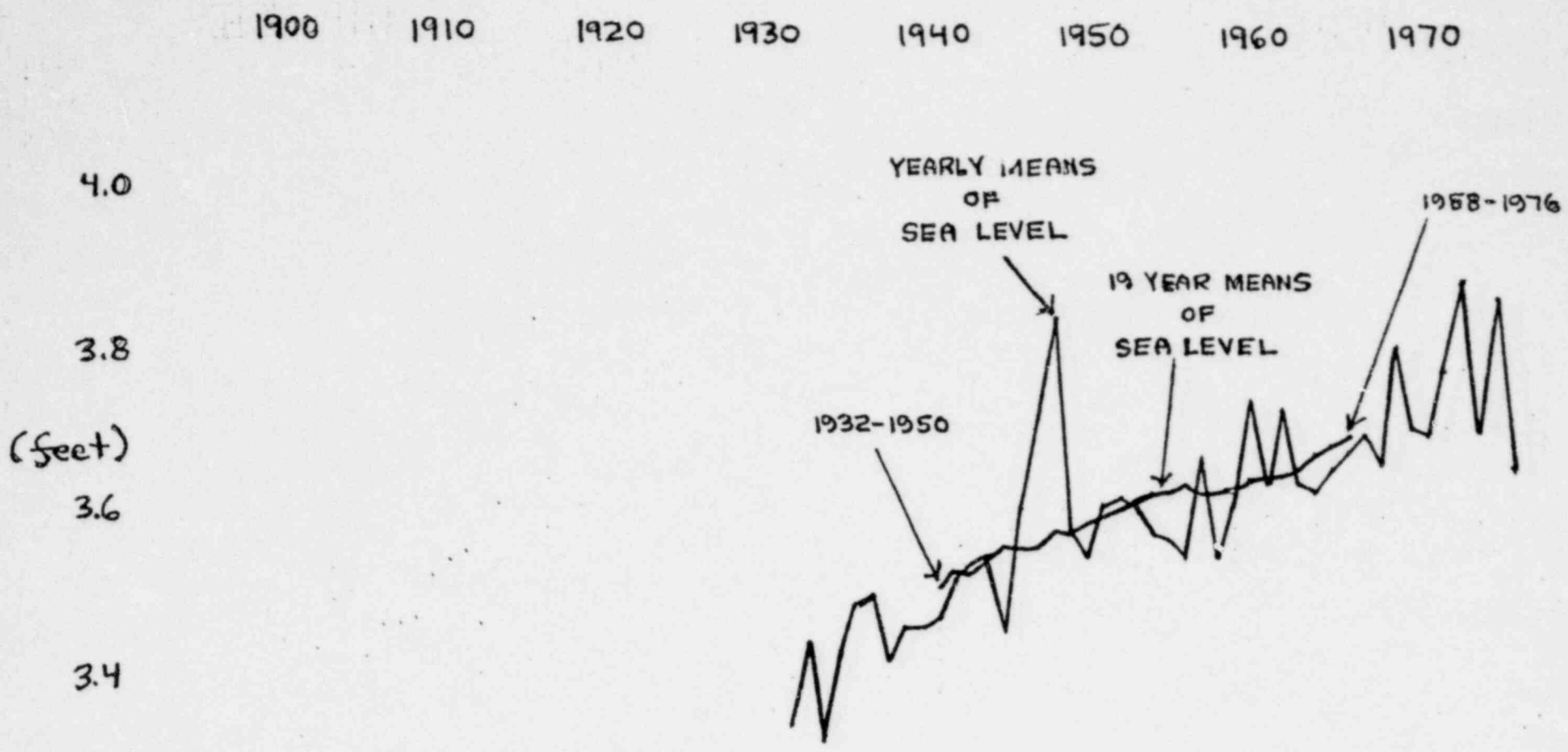

1920
1930
Year
1940
1960
1970
6.00
(Feet)
5.00
4.00
YEARLY MEAN SEA LEVEL
19 YEAR MEAN SEA LEVEL
NATIONAL GEODETIC VERTICAL DATUM (NGVD)
CHARLESTON, SOUTH CAROLINA

Figure 4



SEA LEVEL CURVE MIAMI BEACH 1932-1976

Figure 5

NOAA FORM 77-52
(9-73)

Table 1

TIDES—SUMMARY

U.S. DEPARTMENT OF COMMERCE
NATIONAL OCEANIC AND ATMOSPHERIC ADMINISTRATION

Station Charleston, South Carolina Lat. 32° 46.9 Long. 79° 55.5

OBSERVATION VALUES

	Series	Number of		Greenwich Interval		Mn.	DHQ.	DLQ.	Reading on Staff Used						Reading on Staff of 1921			Remarks
	19 yr. Epochs	HW.	LW.	HWI.	LWI.				MTL.	MSL.	Highest	Lowest	BM....	BM....	MTL.	Highest	Lowest	
				hr.	hr.	ft.	ft.	ft.	ft.	ft.	ft.	ft.	ft.	ft.	ft.	ft.	ft.	
(1)	1922-1940									4.99			0.007	Ft/yr.				
(2)	1927-1945									5.05			↓					
(3)	1929-1947									5.10								
(4)	1931-1949									5.16								
(5)	1934-1952									5.22			0.005	Ft/yr				
(6)	1937-1955									5.26								
(7)	1941-1959									5.31			↓					
(8)	1944-1962									5.36								
(9)	1950-1968									5.33			0.003	Ft/yr.				
(10)	1954-1972									5.37								
(11)																		
(12)	1959-1977									5.43								

ACCEPTED VALUES

Basis	Number of		Greenw... Interval		Local Interval		Mn.	DHQ.	DLQ.	Gt.	Sg.	Referred to LLW.*		On Staff of		Accepted	
	HW.	LW.	HWI	LWI	HWI	LWI						Highest	Lowest	MTL.	LLW.*	Date	Name
			hr.	hr.	hr.	hr.	ft.	ft.	ft.	ft.	ft.	ft.	ft.	ft.	ft.		
								1									

READINGS ON TIDE STAFFS

Staff of									Remarks
	ft.	ft.	ft.	ft.	ft.	ft.	ft.	ft.	NGVD = 4.93
Highest tide,									2.2 mm/yr (.007 Ft/yr)
Higher high water,									1922 to the present
Mean high water,									
Mean tide level,									

NOAA FORM 77-52
(3-73)

TIDES—SUMMARY

Table 2.

U.S. DEPARTMENT OF COMMERCE
NATIONAL OCEANIC AND ATMOSPHERIC ADMINISTRATION

Station Southport, North Carolina Lat. Long.

OBSERVATION VALUES

	Series	Number of		Greenwich Interval		Mn.	DHQ.	DLQ.	Reading on Staff Used GAR 2						Reading on ~~Staff of~~ tape gage 1977			Remarks
		HW.	LW.	HWI.	LWI.				MTL.	MSL.	Highest	Lowest	BM....	BM....	MTL.	Highest	Lowest	
				hr.	hr.	ft.	ft.	ft.	ft.	ft.	ft.	ft.	ft.	ft.	ft.	ft.	ft.	
(1)	1933-1953	21yrs				4.17			4.03	4.08	(Tide Staff)		22.92		12.65			Compared with Charleston (1941-54)
(2)	1977 Aug-1978 July	10mos				4.27			12.64	12.67	(tape gage)		↑ Tide Staff	31.55 ↑ Tape gage	12.64			" "
(3)																		
(4)																		
(5)																		
(6)																		
(7)																		
(8)																		
(9)																		
(10)																		
(11)																		
(12)																		

ACCEPTED VALUES

	Basis	Number of		Greenwich Interval		Local Interval		Mn.	DHQ.	DLQ.	Gt.	Sg.	Referred to LLW.*		On Staff of		Adopted	
		HW.	L.W.	HWI	LWI	HWI	LWI						Highest	Lowest	MTL.	LLW.*	Date	Name
				hr.	hr.	hr.	hr.	ft.	ft.	ft.	ft.	ft.	ft.	ft.	ft.	ft.		

READINGS ON TIDE STAFFS

	Staff of									Remarks
		ft.	ft.	ft.	ft.	ft.	ft.	ft.	ft.	
	Highest tide,									
	Higher high water,									
	Mean high water,									
	Mean tide level,									
	Mean sea level,									
	Mean low water,									
	Lower low water,									
	Lowest tide,									*Cross out the first "L" for stations on the Atlantic coast.

USCOMM-DC 4851-P73