State of South Carolina

Water Resources Commission

Report on Water Quality Conditions in Beaufort County, From Data Collected During April of 1984.

June 22, 1984

OPEN-FILE REPORT 17

State of South Carolina
Water Resources Commission

Alfred H. Vang
Executive Director

June 22, 1984

MEMORANDUM

TO: A.D. Park

FROM: Dyke Spencer

SUBJECT: Report on Water Quality Conditions in Beaufort County, From Data Collected During April of 1984.

Discussion

During the past two years, the Beaufort Office has maintained a water quality monitoring network in Beaufort County. Nearly 200 wells have been sampled for chloride concentrations throughout the county since April of 1982. Currently, 70 wells are monitored twice a year for chloride content. The monitoring network has been reduced in size in order to trouble-shoot the areas that are known to be susceptible to saltwater contamination.

Approximately 60% of the wells that comprise the monitoring network are located on Hilton Head Island. The remaining wells are dispersed along the coastal sea island area of Beaufort County. The reason for the high concentration of monitoring wells at Hilton Head Island is that data collected in the past suggests that saltwater movement is occurring at an unknown rate toward the northern end of the island. The map enclosed shows the various locations where wells are known to contain high concentrations of chlorides.

Network Conditions

At the present, network conditions are good. Very few wells have been replaced in the past two years. Several new wells are now monitored in areas that have recently become victims of saltwater contamination. The greater part of the monitoring wells in the network are pumping wells that discharge daily. The other wells are unused and do not have pumps. Point samples are collected at various depths from these wells.

Currently, at least one well is being monitored in each grid on Hilton Head Island. The remaining coastal portions of Beaufort County

are sparsely monitored, with attention being directed towards specific problem areas.

Anomalies

Hilton Head Island

The best monitoring well coverage in the study area is at Hilton Head Island. Thus, the South Carolina Water Resources Commission has maintained good water quality control across the island for the past two years.

Chloride concentrations remain between 50-150 mg/L along the ocean side of Hilton Head Island to the northern tip of the island, (see map). Larry Hayes reported relatively the same values in 1979.

Recently, saltwater was encountered by drillers at Windmill Harbour Development on neighboring Jenkins Island. Data compiled during the investigation suggested that a saltwater lens was located at the top of the Upper Unit of Tertiary Limestone, overlying a fresher zone. Point samples taken at ten-foot intervals revealed chloride values of 12,000 mg/L at 88 feet LSD, decreasing to as little as 330 mg/L at 130 feet LSD. It is possible that the overlying saltwacer was introduced to the aquifer from an improperly constructed well near by.

The problem at Windmill Harbour is local, but the situation must be closely monitored during phases of further development.

Beaufort

In 1983, water containing chlorides greater than 1000 mg/L was encountered at Victoria Bluff during drilling operations. Since water quality was believed to be good in most areas of Beaufort County lying west of the Broad River, the new finding prompted an investigation of the entire Colleton River area.

During the investigation, a well at the northeastern tip of Pinckney Island was found to contain 272 mg/L chloride. However, a well at the center of the island only contained 14.2 mg/L chloride. The contamination could be due to improper well construction. Unfortunately, no records are available on the well.

Two additional wells containing high chloride values encountered during the Colleton River Study are located at Pinckney Colony. Techniques used while drilling one of the wells proved to be the cause of the contamination. Wells cased into the confining bed in this area tend to be high in chlorides. Leakage into the confining layer from the overlying saltwater must be taking place.

The only other recent development, is the contamination occurring at Datha Island. Numerous wells have been drilled on the island in the past year for golf course irrigation. Chloride values range from approximately 140 mg/L at the north end of the island to as high as

6000 mg/L at the south end. According to old records, wells located on the island that tap the Tertiary Limestone Aquifer have not produced good quality water.

Recommendations

Monitoring wells should be located in the following areas:

(A) Lemon Island
(B) Bluffton
(C) Myrtle Island
(D) Half Moon Island
(E) Chishom Area (Dale)
(F) Coosaw Island
(G) Shell Point Area
(H) Battery Creek Area
(I) Pigeon Point Area
(J) Chechessee Bluff Area

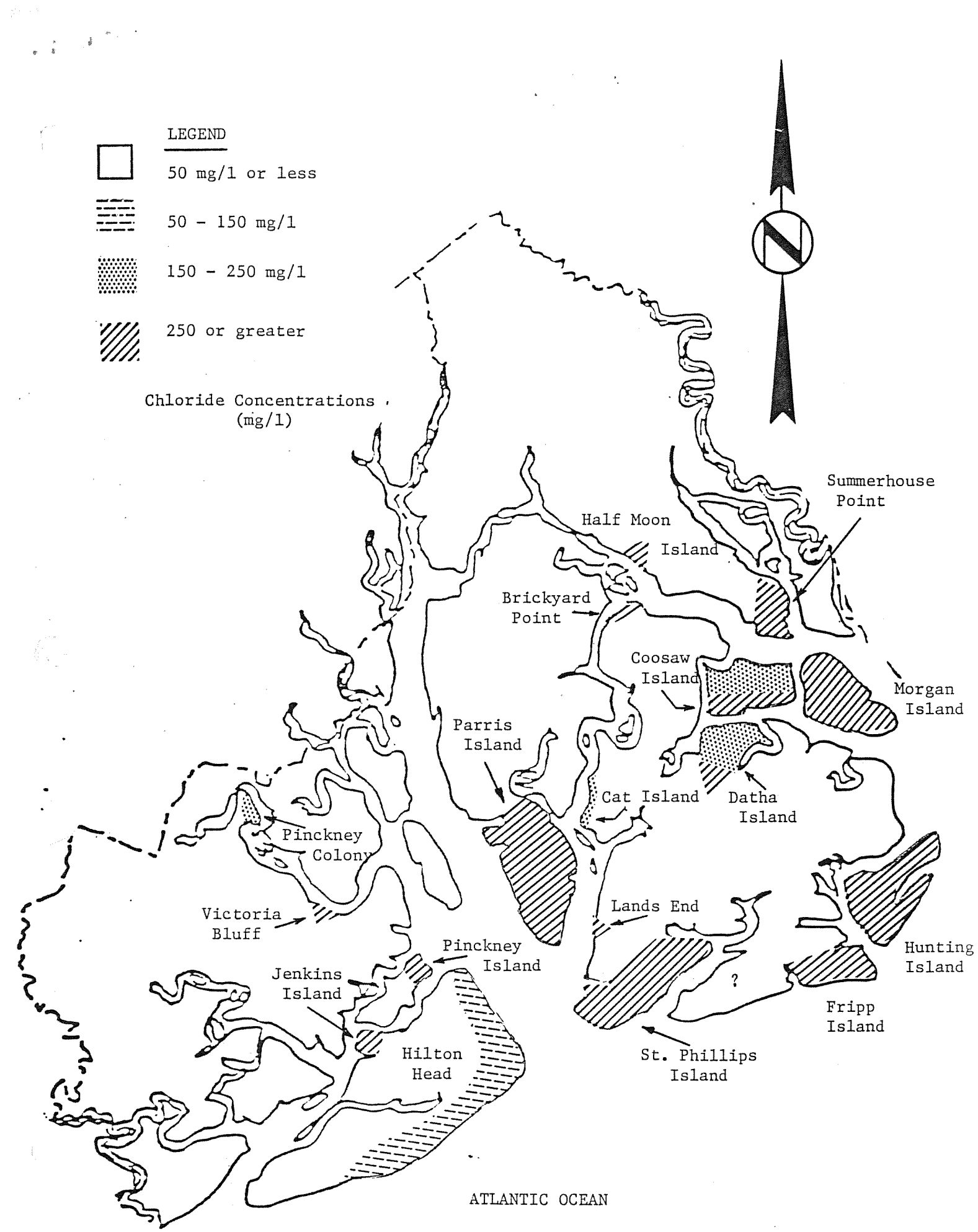
An attempt needs to be made to inventory any wells on St. Phillip's Island, Morgan Island, and Pritchard's Island. At the present, very little is known about ground water conditions on any of these islands.

Summary

For the area as a whole, chloride values remain relatively the same for wells in Beaufort County. Only isolated cases of saltwater contamination have surfaced in recent years. Additional monitoring well coverage in these areas will provide a better understanding of the various modes of saltwater movement that are taking place.

The monitoring network, once composed of nearly 200 wells, has recently been condensed to 70 wells. The coverage is now concentrated in areas that are known to be vulnerable to saltwater contamination. The addition of approximately ten wells in areas that are currently unmonitored should provide an efficient and informative network for future use.

cc: Camille Ransom, III
Mike Pelletier


LEGEND
50 mg/1 or less
50 - 150 mg/1
150 - 250 mg/1
250 or greater
Chloride Concentrations (mg/1)
Summerhouse Point
Half Moon Island
Brickyard Point
Coosaw Island
Morgan Island
Parris Island
Cat Island
Datha Island
Pinckney Colony
Victoria Bluff
Lands End
Pinckney Island
Jenkins Island
Hilton Head
Hunting Island
Fripp Island
St. Phillips Island
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ATLANTIC OCEAN