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7/28/82

Date Out of EFB: JUL 28 1982

To: Don Stubbs
Product Manager 41
Registration Division (TS-767)

DSS

From: S. Creeger, Head (acting) *me*
Review Section 1
Environmental Fate Branch
Hazard Evaluation Division (TS-769c)

Attached please find the EFB review of...

Reg./File No.: 82-SC-07

Chemical: Dibromochloropropane

Type Product: Nematicide

Product Name: NEMATOCIDE EM 12.1

Company Name: College of Agricultural Sciences, Clemson University, SC

Submission Purpose: Rereview of Section 18 request- use of DBCP on
peach orchards throughout South Carolina

ZBB Code: Section 18

ACTION CODE: 513

Date In: 7/13/82

EFB # 388

Date Completed: 7/28/82

TAIS (level II)

Days

51

6

Deferrals To:

 Ecological Effects Branch

 Residue Chemistry Branch

 X Toxicology Branch

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1.0 INTRODUCTION

On July 1, 1982, EFB completed its review of a request by Clemson University, College of Agricultural Sciences to permit the use of DBCP (dibromochloropropane) on peach orchards in specified counties in South Carolina, under FIFRA Section 18.

At that time, EFB concluded that suitable protective clothing and supervision by certified applicators would be essential to concurrence with the exemption. However, our primary concern centered around the apparently high probability of contamination of drinking water supplies as a result of the application of more than nine hundred thousand pounds of DBCP throughout the state, thereby possibly endangering public health.

Because of the urgency of the request, we suggested that usage might be permitted under conditions which might tend to minimize groundwater contamination (e.g. thorough liming of the orchards to enhance the rate of hydrolysis of DBCP to monobromochloropropene)¹.

On July 9, 1982, EFB met with RD (D. Stubbs and L. Welch) and Tox. Branch (R. Gardner). Tox. Branch felt that sufficient additional toxicological information was currently available to warrant an estimate of the level of DBCP in South Carolina drinking water which might result from the proposed Section 18 usage.

Subsequently, a request was received from RD (R. Brown for D. Camp) on 7/14/82) for an expedited scientific review of DBCP for the Specific Exemption.

2.0 STRUCTURE AND DIRECTIONS FOR USE

See review of 7/1/82

3.0 ESTIMATE of DBCP LEVELS in GROUNDWATER

Several monitoring studies have recently been completed both in South Carolina, and in adjacent states with very similar soil types and groundwater situations.

In one such study, Carter¹ sampled soil and water in various areas of South Carolina. Results suggest widespread DBCP-groundwater contamination, at levels of 10 to 100 parts per trillion (ppt). We do not know how extensive previous usage of DBCP was in the areas sampled. In several instances, water samples were found to contain up to one ppB, and higher.

Also, while it may be argued that many of the water samples appeared to be negative for DBCP at the limit of detection (8 ppt), it seems prudent to assume that leaching of DBCP through the sandy soils of South Carolina from previous usage may have not yet reached ground water, but that continued monitoring might show an increasing number of positive samples with time.

It might further be argued that approximately half of South Carolina (the area to the northwest of the "fall line" -see attached maps) draws its water from Artesian aquifer sources, so that proposed DBCP usage in these areas (specifically in the counties of Greenville, Spartanburg, Cherokee and York) would be much less likely to cause groundwater contamination. Unfortunately we have no information to support this contention.

It is our understanding that an overlying aquifer exists in these areas to the northwest of the fall line and is, in fact, the one routinely used as the public water supply. If this is the case, the potential public health hazard in all areas of the state seems equally great.

4.0 CONCLUSION

A reasonable worst case estimate of the level of contamination of drinking water in South Carolina which might result from the proposed Section 18 exemption would be at least 100 ppt. It would not be unreasonable to assume that in some localized areas, DBCP contamination might be significantly higher (perhaps by a factor of 10x or more).

We have no data to support the contention that measured levels of DBCP contamination were maximal values. On the contrary, it seems prudent to assume that leaching of DBCP through the sandy soils of South Carolina from previous usage may have not yet reached ground water, but that continued monitoring might show an increasing number of positive samples with time.

5.0 RECOMMENDATION

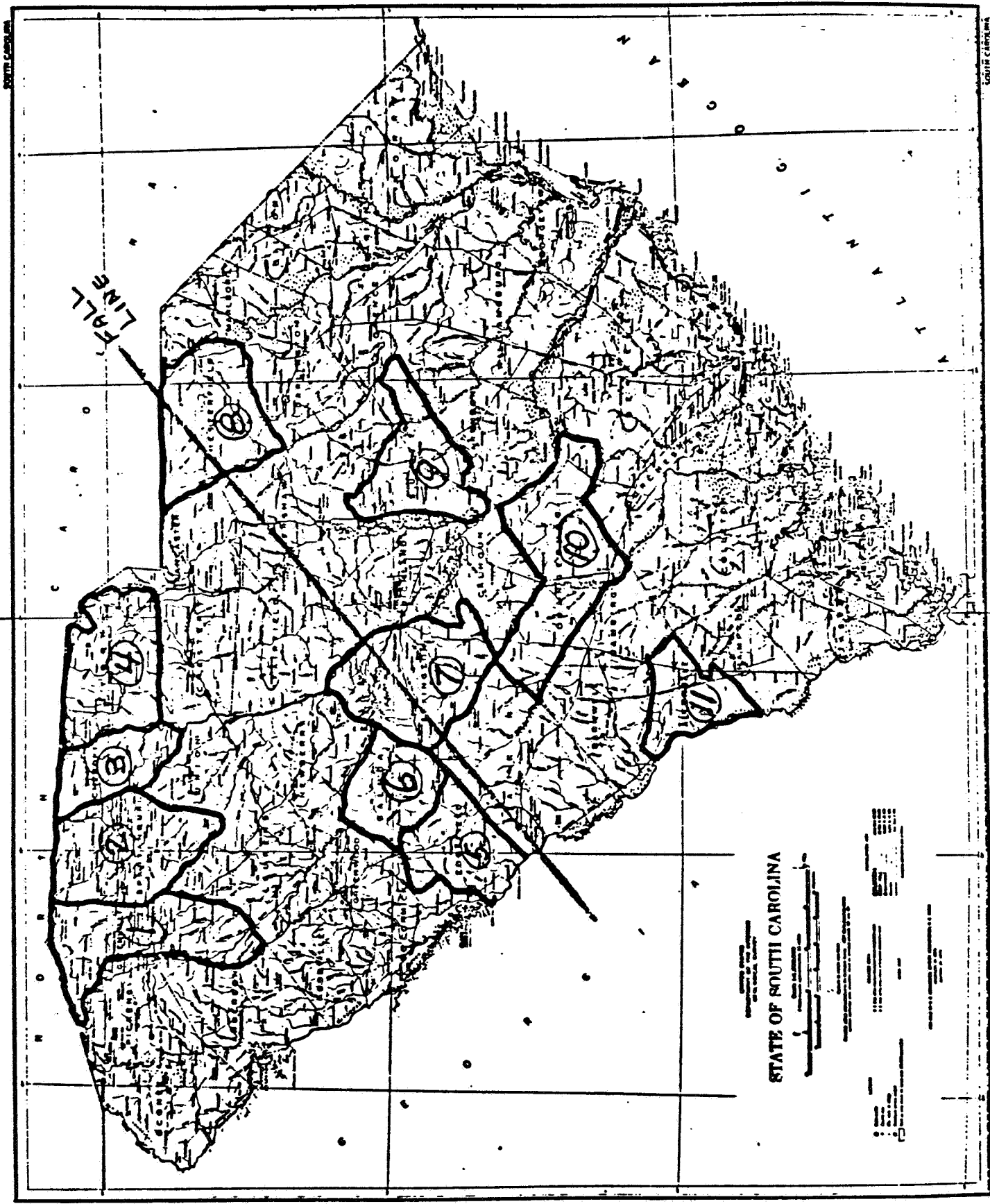
We defer to Toxicology Branch on the significance of levels of DBCP in drinking water in South Carolina at or above the 100 ppt level.



Emil Regelman
Chemist
EFB/HED (TS-769c)
July 28, 1982

References

1. Cohen, Stuart Z. 1981. Summary Report - DBCP in Ground Water in the Southeast. Hazard Evaluation Division, Office of Pesticide Programs. August 12, 1981. at 10.
2. Carter, G.E. et al. 1981. Study of DBCP Groundwater Contaminant Residue in Soil and Ground Water in South Carolina. College of Agricultural Sciences, Clemson University, South Carolina. 1981



FALL LINE

STATE OF SOUTH CAROLINA

Legend and scale information including symbols for roads, rivers, and distances in miles and kilometers.

SOUTH CAROLINA

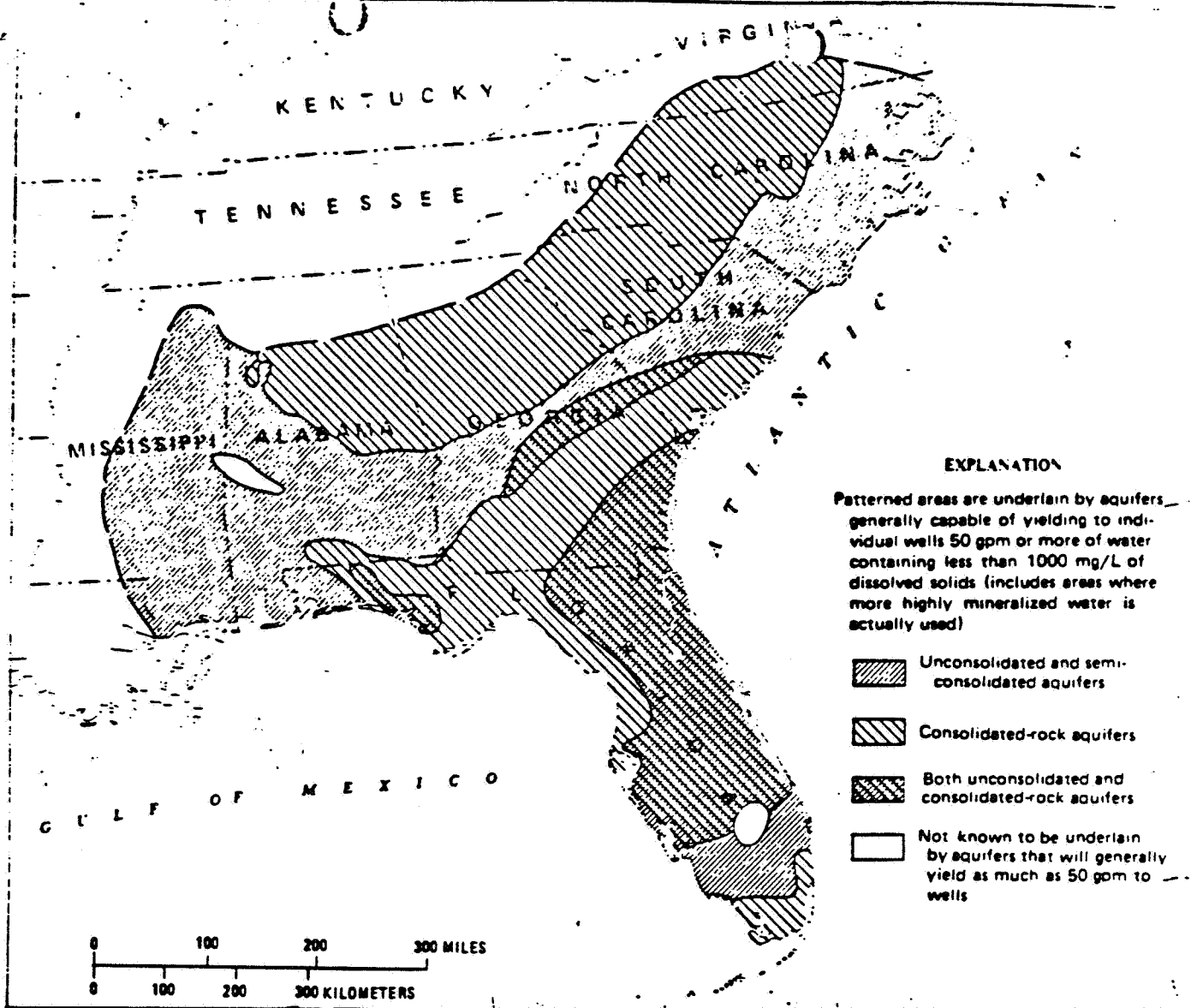


FIGURE 5.—Types of aquifers in the South Atlantic-Gulf Region.

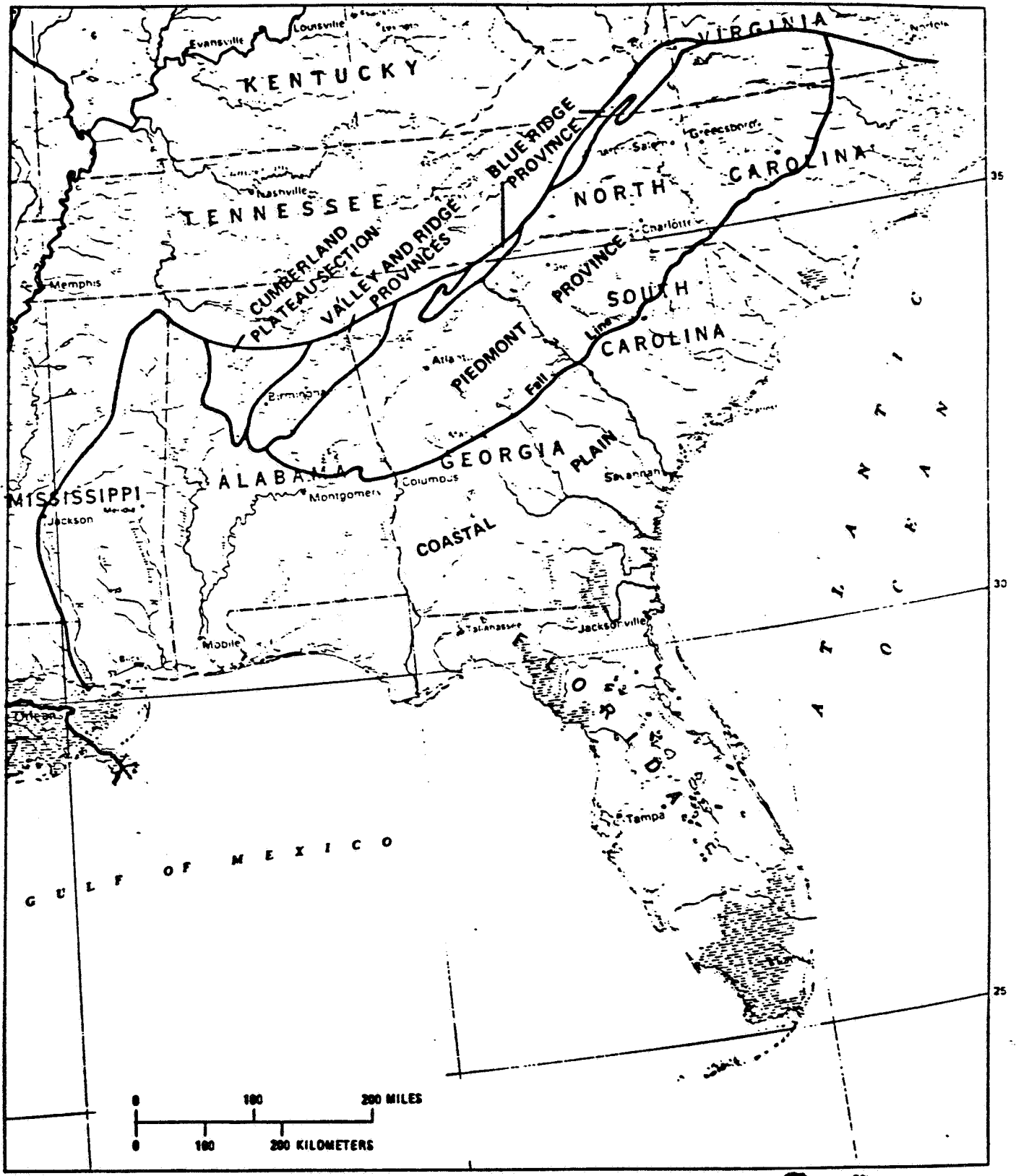


FIGURE 1—Map showing location, major drainage, and principal physiographic subdivisions of the South Atlantic-Gulf Region.