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# Patterns and Trends of Land Use and Land Cover on Atlantic and Gulf Coast Barrier Islands

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# Patterns and Trends of Land Use and Land Cover on Atlantic and Gulf Coast Barrier Islands

*By* Harry F. Lins, Jr.

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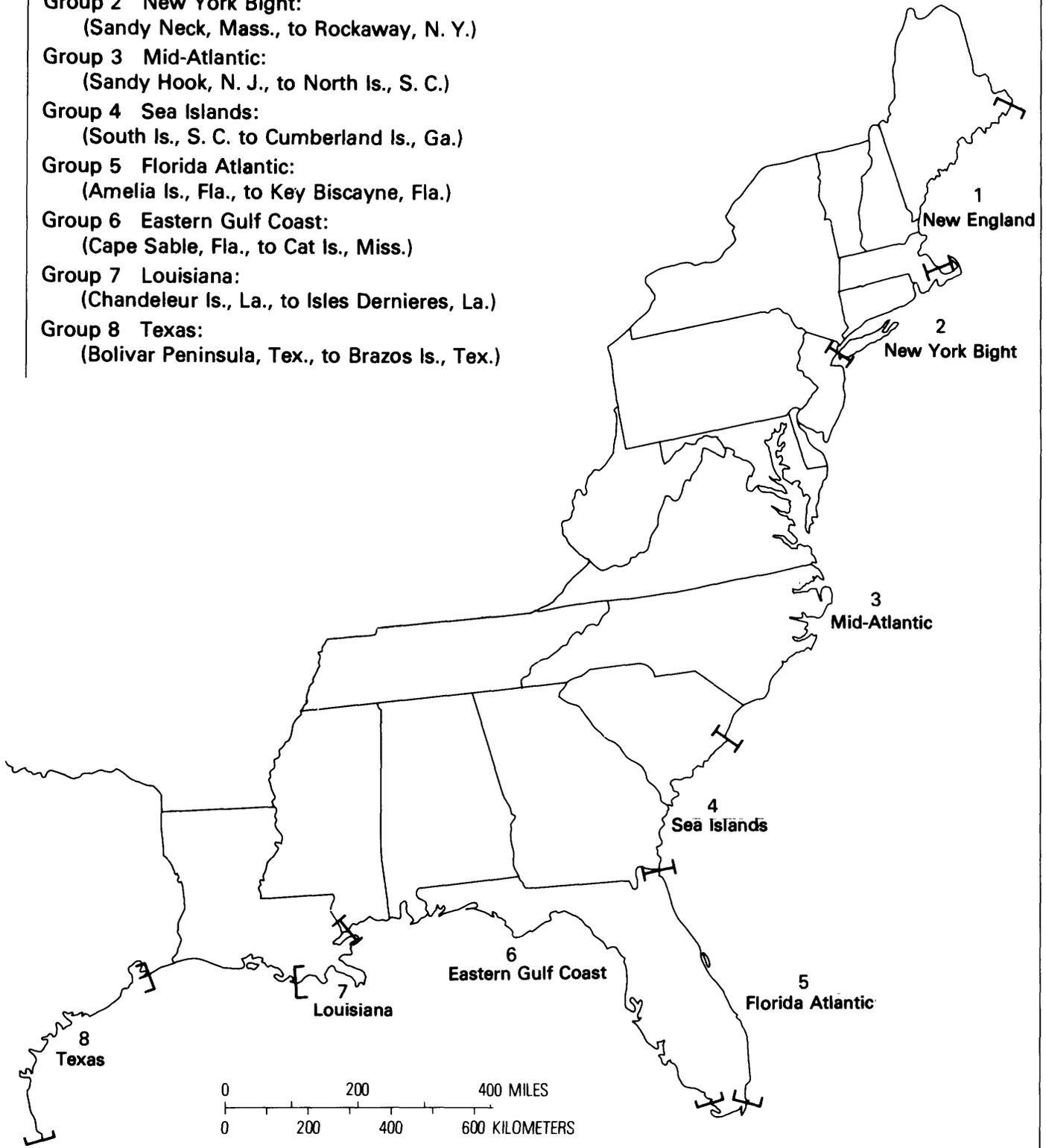
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REGIONAL GROUPINGS OF ATLANTIC AND GULF COAST BARRIER ISLANDS

## PREFACE

Reconciling the conflicts arising from alternative uses of natural resources is one of the preeminent problems facing the United States now. It is only through cooperation between Federal, regional, State and local agencies, that this problem can be addressed effectively. In the 1960's and early 1970's the Federal government took numerous legislative steps toward promoting such cooperation. The Coastal Zone Management Act is a prime example. In his May 1977 Environmental Message to Congress, President Carter stated "Intelligent stewardship of the environment on behalf of all Americans is a prime responsibility of government. Congress has in the past carried out its share of this duty well—so well, in fact, that the primary need today is not for new comprehensive statutes but for sensitive administration and energetic enforcement of the ones we have. Environmental protection is no longer just a legislative job, but one that requires—and will now receive—firm and unsparing support from the Executive Branch." The scope of this commitment is vast and covers the preservation of wilderness, wildlife, natural and historical resources, and concerns the effects of pollution, toxic chemicals, and potential damage caused by energy resource extraction.

One of the specific problems considered by the Carter administration is the uncontrolled, and often hazardous, development on coastal barrier islands. Within the Department of the Interior a work group was established in 1977 to develop an effective plan for protecting the barrier island resource. This group was composed of specialists from various disciplines, agencies, and institutional levels. With only one year allotted to prepare its plan, the work group utilized existing data bases from the operational programs of participating agencies. The data in this report, which are from the U.S. Geological Survey's nationwide land use and land cover mapping program, represent the USGS contribution to the barrier island study. Thus, this report indicates the commitment of the U.S. Geological Survey to applying earth science information to environmental management and problem-solving.

Since data are primarily being presented for analysis, rather than as being analyzed in this report, the text has been kept brief by summarizing why and how the data were prepared, what statistical significance these data have, and finally, by a general discussion of regional patterns. The basic land use and land cover data are compiled in two appendices: the one tabular—of area statistics

by individual barrier island; and the other one graphic—of sections of the 1972-75, 1:250,000-scale USGS open-file land use and land cover maps showing the barrier islands and adjacent coastal land. Using this format, a complete, although generalized, data set on barrier island land use and land cover conditions and trends is presented herein for use in resource and environmental analysis.

Care should be exercised in the interpretation and use of the land use and land cover area values. Any limitation in the utility of these data results from several factors characteristic of the photointerpretation and area measurement techniques used. For example, the 1945-55 data were derived from unrectified aerial photographs. Without planimetric control, measurements made from these photographs contain inherent geometric inaccuracies. Similarly, the planimeter technique used in measuring the area of each land use and land cover category may contain a degree of inaccuracy. Also, there are "selectivity" errors intrinsic to mapping limitations necessarily specified for any land use and land cover classification system. A prime example is minimum mapping sizes. Using the criteria applied to Geological Survey maps, a beach 10 miles long and 500 feet wide will not appear on the maps because the USGS rule is that linear features must be at least 660 feet wide in order to be mapped. Similarly, some small residential or commercial areas will go unmapped since the minimum mapping unit for all urban or built-up areas is 10 acres. Thus, a small housing development (15 to 20 houses on 7 or 8 acres) built along the primary dune line would be mapped as beach, and appear in the area summary as part of the barren land acreage.

Several other problems complicated the compilation of the land use and land cover data. The boundary of each barrier island, for example, was not precisely delineated by the Department of the Interior work group. In some cases the barrier islands were actually barrier beaches, with no distinct landward boundary. In such instances arbitrary delineations had to be made by the land use data compilers. Since the photographs used for the 1945-55 data were of lesser optical quality than the 1972-75 data, consistent boundary determinations between the two time periods, for each barrier island, were often not possible. This frequently resulted in differences in the total area of barrier islands between the two time periods. In many cases these differences were insignificant, but in others they might be quite

significant. It should be recognized, therefore, that a difference in the total area of a barrier island between these two time periods is not necessarily attributable entirely to actual land area change.

Similarly, area differences could result from variations in tidal conditions between the two periods. It is possible that the 1945-55 photographs were obtained during high tide and the 1972-75 photographs during low tide, or vice versa. Although this may have a small effect on the measured area for most islands, in some cases (where there is a high tidal range or a low beach profile) it may be significant.

Clearly, problems and differences like those stated

above make difficult the precise measurement of land use and land cover acreage at two points in time. With all such factors operating simultaneously, the area measurement task is a complex one, and the acreage values obtained are inexact. Nevertheless, the author believes that the percentage values of land in each category reflect the true surface condition.

Several members of the U.S. Geological Survey made substantial contributions to this report. Karen Letke, Robert DeAngelis, Thomas Johnson, and David Wolf compiled and planimetered the 1945-55 land use and land cover maps. George Rosenfield provided the statistical method by which the data were analyzed.

# PATTERNS AND TRENDS OF LAND USE AND LAND COVER ON ATLANTIC AND GULF COAST BARRIER ISLANDS

By Harry F. Lins, Jr.

## ABSTRACT

Data prepared as part of the U.S. Geological Survey's nationwide land use and land cover mapping program have been applied to a Federal study designed to provide recommendations to the President on methods for protecting undeveloped coastal barrier islands. These land use and land cover data covered two time periods, 1945-55 and 1972-75, and included information on intervening changes. They were used by the Federal study group in an inventory and assessment of developed and undeveloped barrier islands. In addition, state and regional summaries were prepared to facilitate area analysis. Based on the 1972-75 data, several general patterns of land use and land cover were discerned along the Atlantic and Gulf coast barrier islands. Wetlands were found to cover nearly one-half of the total area of all barrier islands. Urban and built-up land, and barren land each occupied almost 14 percent of the total area, while forest land covered about 10 percent. In combination, these four categories accounted for nearly 90 percent of the total 1972-75 barrier island land area. Changes in land use and land cover between 1945-55 and 1972-75 were significant along the entire coastline from Maine to Texas. With the exception of urban or built-up land, all categories of land use and land cover decreased between the two time periods. Urban or built-up land increased by nearly 140,000 acres, while wetlands, the category most affected by this urban growth, declined by almost 80,000 acres.

## INTRODUCTION

On May 23, 1977 President Carter presented a broad and comprehensive environmental message to the Congress (Carter, 1977). The President proposed actions to control pollution and protect health, assure environmentally sound energy development, improve the urban environment, protect natural resources, preserve national heritage, protect wildlife, affirm our concern for the global environment, and improve the implementation of environmental laws. As part of his plan for protecting natural resources the President specifically included coastal barrier islands when he said:

Coastal barrier islands are a fragile buffer between the wetlands and the sea. The 189 barrier islands on the Atlantic and Gulf Coasts are an integral part of an ecosystem which helps protect inland areas from flood waves and hurricanes. Many of them are unstable and not suited for development, yet in the past the federal government has subsidized and insured new construction on them. Eventually, we can expect heavy economic losses from this shortsighted policy.

About 68 coastal barrier islands are still unspoiled. Because I believe these remaining natural islands should be protected from unwise development, I am directing the Secretary of the Interior, in consulta-

tion with the Secretary of Commerce, the Council on Environmental Quality, state and local officials of coastal areas, to develop an effective plan for protecting the islands.

His report should include recommendations for action to achieve this purpose.<sup>1</sup>

In following the President's directive, the Secretary of the Interior established the Barrier Island Work Group consisting of representatives from the Heritage Conservation and Recreation Service (HCRS, formerly the Bureau of Outdoor Recreation), the Fish and Wildlife Service (FWS), the National Park Service (NPS), the Office of Coastal Zone Management (OCZM), the Council on Environmental Quality (CEQ), and the Barrier Island Coalition (a consortium of private conservation organizations), with the Heritage Conservation and Recreation Service functioning as lead agency. The Geological Survey was subsequently invited to participate by the HCRS through the Secretary of the Interior and the Assistant Secretary for Energy and Minerals.

The work group's mandate included the development of protection methods, and recommendations for their implementation. This required detailed scientific and resource information on each barrier island, in addition to an evaluation of the numerous possible legal forms of protection. The group's first step was to separate those islands which were developed from those undeveloped or unspoiled. The undeveloped islands then had to be separated into protected and unprotected classes. A barrier island classification system was established with Category I, developed; Category II, undeveloped and unprotected; and Category III, protected. This classification system formed the basis for protection planning.

Island categorization (developed versus undeveloped) could most easily be determined by using recent information on land use and land cover. The U.S. Geological Survey was asked to provide these data, which were being compiled as part of its nationwide land use and land cover mapping program. Since the Geological Survey

<sup>1</sup> Although the President's message specified 189 barrier islands, the total number of islands included in the resulting study was 282, reflecting broader definitional guidelines established by the work group.

had given priority to the mapping of coastal areas in the preceding three years, nearly all of the Atlantic and Gulf coastal barrier islands had been mapped before the HCRS request.

In addition to providing land use and land cover statistics for the 1972-75 period for use in determining the developed state of barrier islands, an assessment of land use and land cover changes on the barrier islands was also made. The purpose of this assessment was to provide data on the location, types, and magnitude of land use and land cover changes on barrier islands which could be used as a guide for estimating future trends in land use change.

### METHODOLOGY

The barrier island land use and land cover area statistics depict land conditions for both 1945-55 and 1972-75, and the attendant changes between these two time periods. These data are presented as Appendix I. Sections of the maps, from which the 1972-75 data were compiled, are presented as Appendix II. The area values of land use and land cover were determined from two series of maps that had been compiled from remotely sensed data.

This study was initiated with land use and land cover information being interpreted from, and mapped directly on, a series of 1945-55 aerial photographic indices.<sup>2</sup> This interpretation was based on the Level I categories of the USGS classification system designed specifically for use with remotely sensed data (Anderson and others, 1976) (table 1). Area measurements of land use and land cover on each barrier island were then compiled using an electronic digitizer as a planimeter.

A similar technique was then used to compile the statistical data for the 1972-75 period. Maps were not compiled, however, since mapped data were already available for this time period from the Geological Survey's nationwide land use and land cover mapping program. These maps, compiled from remotely sensed data using the Level II categories of the USGS classification system, were similar to the maps of the 1945-55 period. To facilitate comparisons between the two time periods, however, all data were recorded at Level I.

Because of the dissimilarities in the aerial photographs for the two time periods, and the medium to small mapping scales used (approximately 1:63,360 for 1945-55, and 1:250,000 for 1972-75), the accuracy of the Appendix I data varies. This problem is complicated by the 10-acre minimum mapping unit used in compiling both sets of maps. Some land features, such as pocket beaches, wooded parcels, and residential areas are often

TABLE 1.—*Land use and land cover classification system for use with remotely sensed data*

[Single-digit classes (**boldface type**) represent Level I categories; two-digit classes (lightface) represent Level II categories]

---

<b>1. Urban or Built-up Land</b>	11. Residential
	12. Commercial and Services
	13. Industrial
	14. Transportation, Communications and Utilities
	15. Industrial and Commercial Complexes
	16. Mixed Urban or Built-up Land
	17. Other Urban or Built-up Land
<b>2. Agricultural Land</b>	21. Cropland and Pasture
	22. Orchards, Groves, Vineyards, Nurseries, and Ornamental Horticultural Areas
	23. Confined Feeding Operations
	24. Other Agricultural Land
<b>3. Rangeland</b>	31. Herbaceous Rangeland
	32. Shrub and Brush Rangeland
	33. Mixed Rangeland
<b>4. Forest Land</b>	41. Deciduous Forest Land
	42. Evergreen Forest Land
	43. Mixed Forest Land
<b>5. Water</b>	51. Streams and Canals
	52. Lakes
	53. Reservoirs
	54. Bays and Estuaries
<b>6. Wetland</b>	61. Forested Wetland
	62. Nonforested Wetland
<b>7. Barren Land</b>	71. Dry Salt Flats
	72. Beaches
	73. Sandy Areas other than Beaches
	74. Bare Exposed Rock
	75. Strip Mines, Quarries, and Gravel Pits
	76. Transitional Areas
	77. Mixed Barren Land
<b>8. Tundra</b>	81. Shrub and Brush Tundra
	82. Herbaceous Tundra
	83. Bare Ground Tundra
	84. Wet Tundra
	85. Mixed Tundra
<b>9. Perennial Snow or Ice</b>	91. Perennial Snowfields
	92. Glaciers

---

smaller than 10 acres and thus are not mapped, resulting in inaccurate area values.

### DATA DESCRIPTION AND REGIONAL ANALYSIS

In addition to the compilation of area statistics of land use and land cover by individual barrier island, state summaries of these data were also prepared for the Barrier Island Work Group (tables 2-4). The State summaries were useful to the work group in two ways. First,

<sup>2</sup> These data included USGS photo indices (scale 1:62,500 to 1:68,500) and high-altitude black and white photographs (1:30,000 and 1:60,000), Agricultural Stabilization and Conservation Service (ASCS) photo indices (1:63,360) and black and white photographs (1:20,000), Soil Conservation Service (SCS) photo indices (1:63,360), and National Ocean Survey (NOS) black and white photographs (1:10,000 and 1:20,000).

TABLE 2.—Area values of Level I land use and land cover on barrier islands, 1945–1955, by State

[Acres in thousands (**boldface type**); percents below (*lightface*); dashes (-----) indicate negligible or no mapping data available; NA indicates category not applicable]

Island location by State	Urban or built-up land	Agricultural land	Rangeland	Forest land	Water bodies	Wetland	Barren land	Total acres
Maine -----	<b>593</b>	NA	<b>105</b>	<b>206</b>	-----	<b>531</b>	<b>213</b>	<b>1,648</b>
	36.0	NA	6.4	12.5	-----	32.2	12.9	
New Hampshire ---	<b>467</b>	NA	NA	NA	NA	<b>546</b>	NA	<b>1,013</b>
	46.1	NA	NA	NA	NA	53.9	NA	
Massachusetts ----	<b>4,519</b>	<b>11</b>	<b>4,793</b>	<b>1,310</b>	<b>528</b>	<b>9,608</b>	<b>13,511</b>	<b>34,280</b>
	13.2	0.1	14.0	3.8	1.5	28.0	39.4	
Rhode Island -----	<b>773</b>	<b>184</b>	<b>153</b>	<b>74</b>	<b>243</b>	<b>1,334</b>	<b>566</b>	<b>3,327</b>
	23.3	5.5	4.6	2.2	7.3	40.1	17.0	
Connecticut -----	<b>264</b>	NA	NA	NA	NA	<b>778</b>	<b>185</b>	<b>1,227</b>
	21.5	NA	NA	NA	NA	63.4	15.1	
New York -----	<b>8,140</b>	<b>358</b>	<b>1,524</b>	<b>2,228</b>	<b>357</b>	<b>7,455</b>	<b>9,813</b>	<b>29,875</b>
	27.2	1.2	5.1	7.5	1.2	25.0	32.8	
New Jersey -----	<b>17,746</b>	<b>88</b>	NA	<b>1,323</b>	<b>1,603</b>	<b>15,701</b>	<b>10,881</b>	<b>47,342</b>
	37.4	0.2	NA	2.8	3.4	33.2	23.0	
Delaware -----	<b>1,507</b>	<b>101</b>	NA	<b>696</b>	<b>114</b>	<b>5,711</b>	<b>1,957</b>	<b>10,086</b>
	15.0	1.0	NA	6.9	1.1	56.6	19.4	
Maryland -----	<b>820</b>	NA	NA	<b>484</b>	<b>100</b>	<b>6,413</b>	<b>4,208</b>	<b>12,025</b>
	6.8	NA	NA	4.0	0.9	53.3	35.0	
Virginia -----	-----	-----	NA	<b>3,360</b>	<b>2,554</b>	<b>51,703</b>	<b>9,398</b>	<b>67,015</b>
	-----	-----	NA	5.0	3.8	76.8	14.0	
North Carolina ----	<b>5,862</b>	NA	NA	<b>14,148</b>	<b>1,118</b>	<b>88,925</b>	<b>40,812</b>	<b>151,195</b>
	3.9	NA	NA	9.4	0.9	58.8	27.0	
South Carolina ----	<b>1,654</b>	<b>9,766</b>	NA	<b>26,133</b>	<b>1,731</b>	<b>107,802</b>	<b>7,792</b>	<b>154,878</b>
	1.1	6.3	NA	16.9	1.1	69.6	5.0	
Georgia -----	<b>5,161</b>	<b>1,116</b>	<b>4,724</b>	<b>43,577</b>	<b>3,297</b>	<b>106,786</b>	<b>6,774</b>	<b>171,435</b>
	3.0	0.7	2.8	25.4	1.9	62.3	3.9	
Florida -----	<b>32,007</b>	<b>3,057</b>	<b>593</b>	<b>69,505</b>	<b>75,722</b>	<b>281,186</b>	<b>52,835</b>	<b>514,905</b>
	6.2	0.6	0.1	13.5	14.7	54.6	10.3	
Alabama -----	-----	NA	-----	<b>4,301</b>	<b>3,398</b>	<b>13,288</b>	<b>5,494</b>	<b>26,481</b>
	-----	NA	-----	16.2	12.8	50.2	20.8	
Mississippi -----	NA	NA	NA	-0-	NA	<b>5,946</b>	<b>3,732</b>	<b>9,678</b>
	NA	NA	NA	0.0	NA	61.4	38.6	
Louisiana -----	<b>1,651</b>	NA	NA	NA	<b>1,419</b>	<b>26,447</b>	<b>7,611</b>	<b>37,128</b>
	4.5	NA	NA	NA	3.8	71.2	20.5	
Texas -----	<b>9,246</b>	<b>65</b>	<b>89,127</b>	<b>816</b>	<b>9,508</b>	<b>187,855</b>	<b>80,545</b>	<b>377,162</b>
	2.5	0.02	23.6	0.2	2.5	49.8	21.4	
Totals: All States -	<b>90,410</b>	<b>14,746</b>	<b>101,019</b>	<b>168,161</b>	<b>101,992</b>	<b>918,015</b>	<b>256,357</b>	<b>1,650,700</b>
	5.5	0.9	6.1	10.2	6.2	55.6	15.5	

many State-level agencies provided information in the form of State summaries. Similarly, cooperating Federal agencies supplied data which were aggregated by State. The State summaries of land use and land cover information were, therefore, more easily correlated with these other data sets. Second, a major part of the work group's investigation focused on barrier island protection. Since the legal protection of land involves a consideration of ownership that, in turn, often involves State law, it was expedient to have the land use and land cover data summarized by State.

Several distinct patterns of land use and land cover can be quickly discerned from table 3. For example, Florida had the largest barrier island area in 1972–75, with more than one-half million acres. Barrier islands in Florida also had the largest area in urban or built-up land with nearly 102,000 acres. This value represents nearly 20 percent of the total barrier island area within the state and about 6 percent of the total or built-up area

on all barrier islands of the Atlantic and Gulf coasts. New Hampshire, in contrast with Florida, has the smallest barrier island area, just under 1,100 acres, with a little less than 800 acres or 72 percent urbanized. Urban or built-up land is found on the barrier islands of every state along the Atlantic and Gulf coasts except Mississippi. Its five islands, all located offshore, are only accessible from the mainland by boat. Moreover, The Mississippi islands are in a natural, undeveloped condition with about 61 percent of their area in wetland, 37 percent in barren land (beaches and dunes), and nearly 2 percent in forest land.

Wetland is the only land use and land cover category consistently found on the barrier islands of every State (table 3). Composing about half of the total barrier island land area, wetland varies from less than 15 percent in Maine to more than 67 percent in Virginia.

Barren land, another ubiquitous category, occupies slightly more area than urban or built-up land (approx-

TABLE 3.—Area values of Level I land use and land cover on barrier islands, 1972–1975, by State

[Acres in thousands (**boldface type**); percents below (lightface); dashes (-----) indicate negligible or no mapping data available; NA indicates category not applicable]

Island location by State	Urban or built-up land	Agricultural land	Rangeland	Forest land	Water bodies	Wetland	Barren land	Total acres
Maine -----	<b>1,165</b>	NA	-----	84	-----	<b>239</b>	<b>134</b>	<b>1,622</b>
	71.8	NA	-----	5.2	-----	14.7	8.3	
New Hampshire ---	<b>780</b>	NA	NA	NA	NA	<b>301</b>	NA	<b>1,081</b>
	72.1	NA	NA	NA	NA	27.9	NA	
Massachusetts ----	<b>8,128</b>	<b>70</b>	<b>4,454</b>	<b>1,220</b>	<b>582</b>	<b>8,900</b>	<b>14,407</b>	<b>37,761</b>
	21.5	0.2	11.8	3.2	1.5	23.6	38.2	
Rhode Island -----	<b>1,226</b>	<b>246</b>	<b>153</b>	<b>162</b>	<b>213</b>	<b>1,430</b>	<b>94</b>	<b>3,524</b>
	34.8	7.0	4.3	4.6	6.0	40.6	2.7	
Connecticut -----	<b>576</b>	NA	NA	NA	NA	<b>563</b>	<b>218</b>	<b>1,357</b>
	42.4	NA	NA	NA	NA	41.5	16.1	
New York -----	<b>11,578</b>	<b>273</b>	<b>1,580</b>	<b>1,508</b>	<b>550</b>	<b>7,368</b>	<b>10,171</b>	<b>33,028</b>
	35.0	0.8	4.8	4.5	1.7	22.4	30.7	
New Jersey -----	<b>22,719</b>	<b>358</b>	NA	<b>627</b>	<b>1,824</b>	<b>13,255</b>	<b>9,172</b>	<b>47,955</b>
	47.4	0.8	NA	1.3	3.8	27.6	19.1	
Delaware -----	<b>2,956</b>	<b>26</b>	NA	<b>64</b>	<b>262</b>	<b>4,115</b>	<b>2,688</b>	<b>10,111</b>
	29.2	0.2	NA	0.6	2.6	40.7	26.7	
Maryland -----	<b>1,848</b>	NA	NA	<b>651</b>	<b>160</b>	<b>5,975</b>	<b>4,850</b>	<b>13,484</b>
	13.7	NA	NA	4.8	1.2	44.3	36.0	
Virginia -----	<b>1,144</b>	<b>51</b>	NA	<b>4,487</b>	<b>2,327</b>	<b>46,404</b>	<b>14,505</b>	<b>68,918</b>
	1.6	0.1	NA	6.5	3.3	67.5	21.0	
North Carolina ----	<b>21,625</b>	NA	NA	<b>11,769</b>	<b>1,224</b>	<b>78,202</b>	<b>42,057</b>	<b>154,877</b>
	14.0	NA	NA	7.6	0.8	50.5	27.6	
South Carolina ----	<b>13,081</b>	<b>5,152</b>	NA	<b>24,994</b>	<b>2,178</b>	<b>100,949</b>	<b>8,234</b>	<b>154,588</b>
	8.5	3.3	NA	16.2	1.4	65.3	5.3	
Georgia -----	<b>8,436</b>	<b>1,459</b>	<b>3,930</b>	<b>42,375</b>	<b>3,903</b>	<b>103,551</b>	<b>7,944</b>	<b>171,598</b>
	4.9	0.9	2.3	24.7	2.3	60.3	4.6	
Florida -----	<b>101,988</b>	<b>2,437</b>	<b>1,260</b>	<b>56,001</b>	<b>73,769</b>	<b>244,791</b>	<b>38,687</b>	<b>518,933</b>
	19.7	0.5	0.2	10.8	14.2	47.1	7.5	
Alabama -----	<b>5,273</b>	NA	<b>2,130</b>	<b>6,951</b>	<b>3,123</b>	<b>6,687</b>	<b>4,049</b>	<b>28,213</b>
	18.7	NA	7.5	24.8	11.0	23.7	14.3	
Mississippi -----	NA	NA	NA	<b>179</b>	NA	<b>5,964</b>	<b>3,584</b>	<b>9,727</b>
	NA	NA	NA	1.8	NA	61.4	36.8	
Louisiana -----	<b>6,746</b>	NA	NA	NA	<b>1,504</b>	<b>24,030</b>	<b>6,238</b>	<b>38,518</b>
	17.5	NA	NA	NA	3.9	62.4	16.2	
Texas -----	<b>19,410</b>	<b>88</b>	<b>85,305</b>	<b>1,152</b>	<b>9,631</b>	<b>186,158</b>	<b>82,209</b>	<b>383,953</b>
	5.3	0.02	23.5	0.3	2.7	51.2	21.0	
Totals: All States -	<b>228,679</b>	<b>10,160</b>	<b>98,812</b>	<b>152,224</b>	<b>101,250</b>	<b>838,882</b>	<b>249,241</b>	<b>1,679,248</b>
	13.6	0.6	5.9	9.1	6.0	50.0	14.8	

imately 249,000 acres). Almost all barren land occurs naturally as beaches or dunes. There are, however, some cases where barren land appears as transitional or "fill" areas, and these are characteristically found along the back-bay margins of barrier islands, marking sites of planned urban or built-up development. Such areas are observable in New Jersey, Delaware, Maryland, Virginia, North and South Carolina, and Florida—especially on the Gulf coast side.

Land use and land cover changes between 1945–55 and 1972–75 on the barrier islands of Atlantic and Gulf coast states have been diverse, reflecting varying social, economic, and political influences. Certain trends, have been uniform (table 4). Urban or built-up land, for example, has increased on barrier islands in every state except Mississippi, which has no urban land, and usually by dramatic proportions. Florida's urbanized land increased by nearly 70,000 acres, North Carolina's by more than 15,000 acres, and South Carolina's by more

than 11,000 acres; however, Connecticut and New Hampshire's urbanized area increased by only 300 acres each. Most of this increase has been oriented toward recreation and second home development, although in Louisiana a part of the urban trend was commercial and industrial, in support of the development of offshore energy resources.

With the exception of small increases in Rhode Island and Mississippi, wetland area decreased considerably in all states between 1945–55 and 1972–75, for a total loss of 80,000 acres. Barren also decreased, by more than 7,100 but this was not in a uniform pattern. In some states—Massachusetts, Connecticut, New York, Delaware, Maryland, Virginia, North Carolina, South Carolina, Georgia, and Texas—barren land actually increased—primarily as a result of increased transitional land area. Most of these gains, however, were each less than 1,200 acres, although Texas was nearly 1,700, and were readily offset by the sizeable losses in the other

TABLE 4.—Changes in area values of Level I land use and land cover on barrier islands between 1945–55 and 1972–75, by State [Acres in thousands (boldface type); percents below (lightface); dashes (-----) indicate negligible or no mapping data available; NA indicates category not applicable]

Island location by State	Urban or built-up land	Agricultural land	Rangeland	Forest land	Water bodies	Wetland	Barren land	Changes mapped between 1945–55 and 1972–75
Maine -----	+572	NA	-105	-122	-----	-292	-79	-26
	+96.0	NA	-100.0	-59.0	-----	-55.0	-37.0	-2.0
New Hampshire ---	+313	NA	NA	NA	NA	-245	-----	+68
	+67.0	NA	NA	NA	NA	-45.0	-----	+7.0
Massachusetts ----	+3,609	+59	-339	-90	+54	-708	+896	+3,481
	+80.0	+536.0	-7.0	-7.0	+10	-7.0	+7.0	+11.0
Rhode Island -----	+453	+62	-----	+88	-30	+96	-472	197
	+59.0	+34.0	-----	+119.0	-12.0	+7.0	-83.0	+6.0
Connecticut -----	+312	NA	NA	NA	NA	-215	+33	+130
	+118.0	NA	NA	NA	NA	-28.0	+18.0	+11.0
New York -----	+3,438	-85	+56	-720	+193	-87	+358	+3,153
	+42.0	-24.0	+4.0	-32.0	+54.0	-1.0	+4.0	+11.0
New Jersey -----	+4,973	+270	NA	-696	+221	-2,447	-1,709	+613
	+28.0	+307.0	NA	-53.0	+14.0	-16.0	-16.0	+1.0
Delaware -----	+1,449	-75	NA	-632	+148	-1,596	+731	+25
	+96.0	-74.0	NA	-91.0	+56.0	-28.0	+37.0	+0.2
Maryland -----	+1,028	NA	NA	+167	+60	-438	+642	+1,459
	+125.0	NA	NA	+35.0	+60.0	-7.0	+15.0	+12.0
Virginia -----	+1,144	+51	NA	+1,127	-227	-5,299	+5,107	+1,903
	+	+	NA	+34.0	-9.0	-10.0	+54.0	+3.0
North Carolina ----	+15,763	NA	NA	-2,379	-194	-10,723	+1,215	+3,682
	+269.0	NA	NA	-17.0	-14.0	-12.0	+3.0	+2.0
South Carolina ----	+11,427	-4,614	NA	-1,139	+447	-6,853	+442	-290
	+691.0	-47.0	NA	-4.0	+26.0	-6.0	+6.0	-0.2
Georgia -----	+3,275	+343	-794	-1,202	+606	-3,235	+1,170	+163
	+63.0	+31.0	-17.0	-3.0	+18.0	-3.0	+17.0	+0.09
Florida -----	+67,981	-620	+667	-13,504	-1,953	-36,395	-14,148	+4,028
	+219.0	-20.0	+112.0	-19.0	-3.0	-13.0	-27.0	+1.0
Alabama -----	+5,273	NA	+2,130	+2,650	-275	-6,601	-1,445	+1,732
	+	NA	+	+62.0	-8.0	-50.0	-26.0	+7.0
Mississippi -----	NA	NA	NA	+179	NA	+18	-148	+49
	NA	NA	NA	+	NA	+0.3	-4.0	+0.5
Louisiana -----	+5,095	NA	NA	NA	+85	-2,417	-1,373	+1,390
	+309.0	NA	NA	NA	+6.0	-9.0	-18.0	+4.0
Texas -----	+10,164	+23	-3,822	+336	+123	-1,697	+1,664	+6,791
	+110.0	+35.0	-4.0	+41.0	+1.0	-1.0	+2.0	+2.0
TOTALS -----	+138,269	-4,586	-2,207	-15,937	-742	-79,133	-7,116	+28,548
	+153.0	-31.0	-2.0	-10.0	-0.7	-9.0	-3.0	+2.0

states. Florida, for example, lost more than 14,000 acres of barren land, New Jersey over 1,700, and Alabama more than 1,400 acres.

For regional and environmental analysis of barrier island land use and land cover data, a systematic morphological grouping based primarily on barrier island geological and geomorphological characteristics, and following in part the coastal classification work of Dolan and others (1975) was prepared. Eight regional groups were delineated along the Atlantic and Gulf coasts (fig. 1). Each has a different set of shoreline configurations, composition, and dynamic properties. The land use and land cover data, summarized according to this regionalization, appear in tables 5 to 7. A description of each regional group follows.

Group 1, consisting of 21 New England barrier islands, is located between Sheepscot, Me., and Long

Beach, Mass. (App. II, figs. 8–12). The shoreline characteristics of this coastal region vary from rocky in Maine, to sandy pocket beaches in Massachusetts. The coastline throughout is essentially low-cliffed and composed primarily of older resistant rocks (Putnam and others, 1960). The 1972–75 data show 18 islands of this group with some level of urban development, 13 of them being more than 50 percent urbanized, and 4 of them,—Pine Point, Goose Creek, Wells Beach, and Nantasket Beach—totally, or 100 percent, urbanized.

This high degree of urbanization is influenced by several conditions. First, barrier islands are aesthetically desirable for recreation and residence. Although these two societal factors exert considerable development pressure on all barrier islands, that pressure is strongly felt in the New England group where all 21 islands total a relatively small 14,769 acres. The size

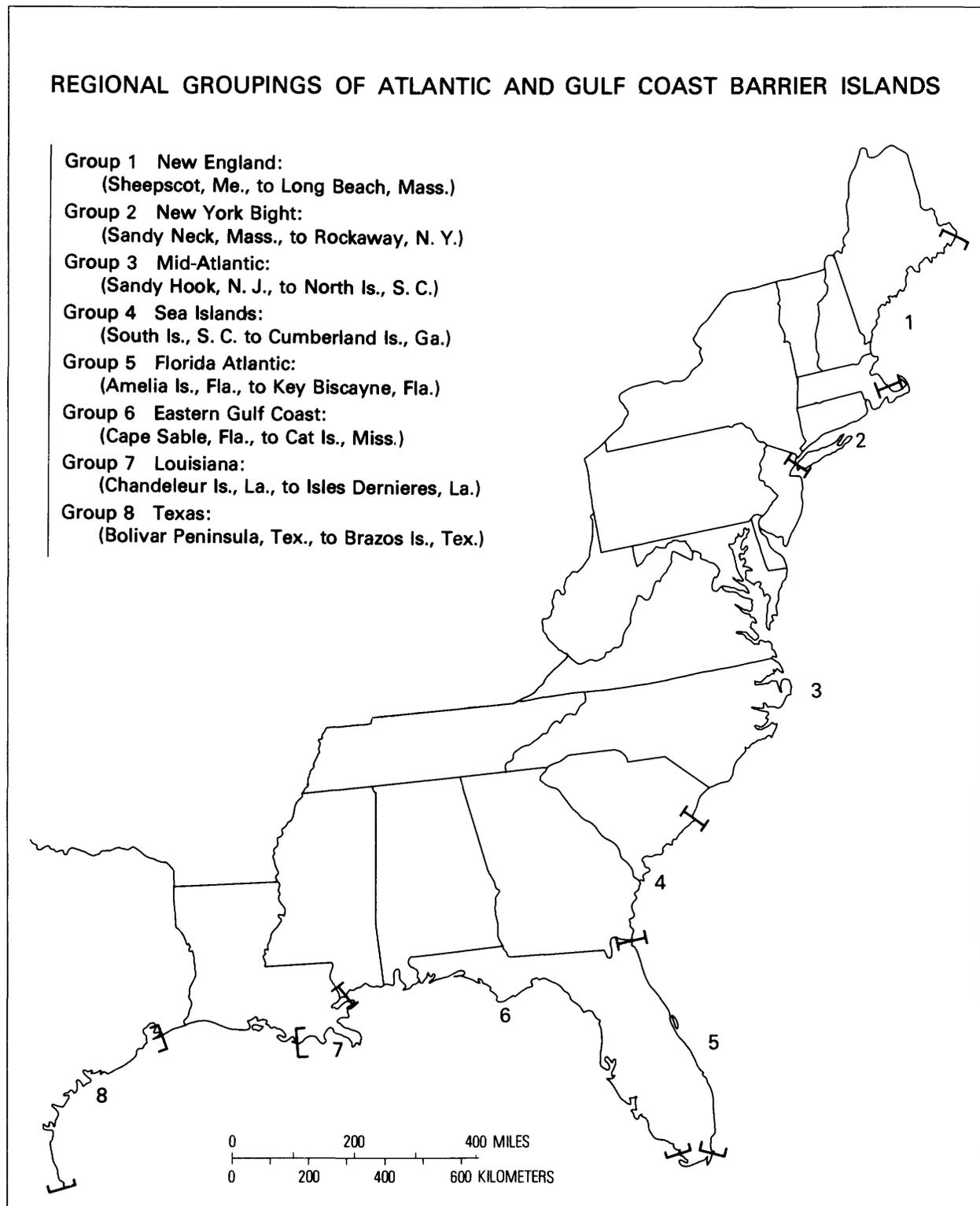


FIGURE 1.—Regional groupings of Atlantic and Gulf coast barrier islands.

becomes even more critical when the area is further influenced by proximity to large coastal cities. Most of these Group 1 barrier islands are located near Bath, Portland, Portsmouth, and Boston, and are linked to these cities by a good transportation network. Finally, the relatively stable geomorphological nature of these

islands enhances their suitability for development, thereby attracting people who might otherwise choose to build in safer areas.

Approximately 43 percent, or nearly 6,300 acres, of the total New England group area is urban or built-up land (table 6). Wetland accounts for 30 percent or nearly

TABLE 5.—Area values of Level I land use and land cover on barrier islands for 1945-55, by regional group

[Acres in thousand (**boldface type**); percents below (lightface); dashes (-----) indicate negligible or no mapping data available; NA indicates category not applicable]

Island location by group	Urban or built-up land	Agricultural land	Rangeland	Forest land	Water bodies	Wetland	Barren land	Total acres
New England -----	<b>4,279</b>	-----	<b>105</b>	<b>726</b>	-----	<b>5,627</b>	<b>2,935</b>	<b>13,672</b>
	31.3	-----	0.8	5.3	-----	41.2	21.4	
New York Bight ---	<b>10,477</b>	<b>553</b>	<b>6,470</b>	<b>3,092</b>	<b>1,128</b>	<b>14,625</b>	<b>21,353</b>	<b>57,698</b>
	18.2	1.0	1.2	5.4	1.9	25.3	37.0	
Mid-Atlantic -----	<b>26,234</b>	<b>189</b>	NA	<b>20,599</b>	<b>6,421</b>	<b>179,341</b>	<b>69,723</b>	<b>302,507</b>
	8.7	0.1	NA	6.8	2.1	59.3	23.0	
Sea Islands -----	<b>6,516</b>	<b>10,882</b>	<b>4,724</b>	<b>69,122</b>	<b>4,396</b>	<b>203,700</b>	<b>12,129</b>	<b>311,469</b>
	2.1	3.5	1.5	22.2	1.4	65.4	3.9	
Florida Atlantic ---	<b>22,646</b>	<b>3,057</b>	-----	<b>45,071</b>	<b>749</b>	<b>54,088</b>	<b>21,130</b>	<b>146,741</b>
	15.4	2.2	-----	30.7	0.5	36.8	14.4	
Eastern Gulf Coast_	<b>9,361</b>	NA	<b>593</b>	<b>28,735</b>	<b>78,371</b>	<b>246,332</b>	<b>40,931</b>	<b>404,323</b>
	2.3	NA	0.1	7.2	19.4	60.9	10.1	
Louisiana -----	<b>1,651</b>	NA	NA	NA	<b>1,419</b>	<b>26,447</b>	<b>7,611</b>	<b>37,128</b>
	4.5	NA	NA	NA	3.8	71.2	20.5	
Texas -----	<b>9,246</b>	<b>65</b>	<b>89,127</b>	<b>816</b>	<b>9,508</b>	<b>187,855</b>	<b>80,545</b>	<b>377,162</b>
	2.5	0.02	23.6	0.2	2.5	49.8	21.4	
TOTALS -----	<b>90,410</b>	<b>14,746</b>	<b>101,019</b>	<b>168,161</b>	<b>101,992</b>	<b>918,015</b>	<b>256,357</b>	<b>1,650,700</b>
	5.5	0.9	6.1	10.2	6.2	55.6	15.5	

4,500 acres of the group area, barren land 22 percent or a little more than 3,200 acres (primarily beaches), and forest land 5 percent or nearly 800 acres. Between 1945-55 and 1972-75 the predominant land use and land cover trend on the New England barrier islands was toward an increase in urban land of 47 percent, or a little over 2,000 acres. This urbanization was primarily at the expense of wetland, which diminished by 21 percent or nearly 1,200 acres.

Group 2, the New York Bight barrier islands, is a quite different island group morphologically. Stretching from Sandy Neck, Mass., to Rockaway, N.Y. (App. II, figs. 12-27), this group is a remnant of Pleistocene glaciation, composed of glacial and fluvio-glacial deposits (King and Beikman, 1974). The coastal zone adjacent to the New York Bight is hilly, with moderate local relief and

gentle slopes. The barrier island shorelines are primarily of sandy beach form, although some are characterized by pocket beaches (Putnam and others, 1960). With a total area of nearly 64,000 acres in the 40 islands, 24 evidence some urban development, 9 are more than 50 percent urbanized, and 2—Madaket and North Haven—are totally urbanized.

Although the Group 2 islands had over 17,000 acres of urban or built-up land in 1972-75 (nearly three times that in Group 1; see table 6), this acreage corresponded to 27 percent of the total group area, much less than the 43 percent value in Group 1. One reason for this is that several of the Group 2 islands are physically isolated so access is limited. Muskeget, Nashawena, Cuttyhunk, and Block Islands, as well as parts of Martha's Vineyard and Nantucket, are good examples. Another reason is

TABLE 6.—Area values of Level I land use and land cover on barrier islands for 1972-75, by regional group

[Acres in thousands (**boldface type**); percents below (lightface); dashes (-----) indicate negligible or no mapping data available; NA indicates category not applicable]

Island location by group	Urban or built-up land	Agricultural land	Rangeland	Forest land	Water bodies	Wetland	Barren land	Total acres
New England -----	<b>6,291</b>	-----	-----	<b>779</b>	-----	<b>4,461</b>	<b>3,238</b>	<b>14,769</b>
	42.6	-----	-----	5.3	-----	30.2	21.9	
New York Bight --	<b>17,162</b>	<b>589</b>	<b>6,187</b>	<b>2,195</b>	<b>1,345</b>	<b>14,340</b>	<b>21,786</b>	<b>63,604</b>
	27.0	0.9	9.7	3.5	2.1	22.5	34.3	
Mid-Atlantic -----	<b>52,173</b>	<b>435</b>	-----	<b>18,469</b>	<b>6,380</b>	<b>158,441</b>	<b>73,681</b>	<b>309,579</b>
	16.8	0.1	-----	6.0	2.1	51.2	23.8	
Sea Islands -----	<b>19,636</b>	<b>6,611</b>	<b>3,930</b>	<b>66,498</b>	<b>5,498</b>	<b>194,010</b>	<b>15,769</b>	<b>311,952</b>
	6.3	2.1	1.3	21.3	1.8	62.2	5.0	
Florida Atlantic ---	<b>69,659</b>	<b>2,281</b>	<b>214</b>	<b>26,618</b>	<b>1,171</b>	<b>39,754</b>	<b>10,745</b>	<b>150,442</b>
	46.3	1.5	0.1	17.7	0.8	26.4	7.2	
Eastern Gulf Coast_	<b>37,602</b>	<b>156</b>	<b>3,176</b>	<b>36,513</b>	<b>75,721</b>	<b>217,688</b>	<b>35,575</b>	<b>406,431</b>
	9.2	0.04	0.8	9.0	18.6	53.6	8.8	
Louisiana -----	<b>6,746</b>	NA	NA	NA	<b>1,504</b>	<b>24,030</b>	<b>6,238</b>	<b>38,518</b>
	17.5	NA	NA	NA	3.9	62.4	16.2	
Texas -----	<b>19,410</b>	<b>88</b>	<b>85,305</b>	<b>1,152</b>	<b>9,631</b>	<b>186,158</b>	<b>82,209</b>	<b>383,953</b>
	5.1	0.02	22.2	0.3	2.5	48.5	21.4	
TOTALS -----	<b>228,679</b>	<b>10,160</b>	<b>98,812</b>	<b>152,224</b>	<b>101,250</b>	<b>838,882</b>	<b>249,241</b>	<b>1,679,248</b>
	13.6	0.6	5.9	9.1	6.0	50.0	14.8	

TABLE 7.—Changes in area values of Level I land use and land cover on barrier islands between 1945–55 and 1972–75, by regional group

[Acres in thousands (**boldface type**); percents below (*lightface*); dashes (-----) indicate negligible or no mapping data available; + sign only indicates increase not compared; NA indicates category not applicable]

Island location by group	Urban or built-up land	Agricultural land	Rangeland	Forest land	Water bodies	Wetland	Barren land	Changes mapped between 1945–55 and 1972–75
New England -----	+2,012	-----	-105	+53	-----	-1,166	+303	+1,097
	+47.0	-----	-100.0	+7.0	-----	-21.0	+10.0	+8.0
New York Bight ---	+6,685	+36	-283	-897	+217	-285	+433	+5,906
	+39.0	+7.0	-4.0	-29.0	+19.0	-2.0	+2.0	+10.0
Mid-Atlantic -----	+25,939	+246	-----	-2,130	-41	-20,900	+3,640	+7,072
	+99.0	+130.0	-----	-10.0	-0.6	-12.0	+6.0	+2.0
Sea Islands -----	+13,120	-4,271	-794	-2,624	+1,102	-9,690	+3,617	+483
	+201.0	-39.0	-17.0	-4.0	+25.0	-5.0	+30.0	+0.2
Florida Atlantic ---	+47,013	-776	+214	-18,453	+422	-14,331	-10,385	+3,701
	+208.0	-25.0	+	-41.0	+56.0	-27.0	-49.0	+3.0
Eastern Gulf Coast	+28,241	+156	+2,583	+7,778	-2,650	-28,644	-5,356	+2,108
	+302.0	+	+436.0	+27.0	-3.0	-12.0	-13.0	+1.0
Louisiana -----	+5,095	NA	NA	NA	+85	-2,417	-1,373	+1,390
	+309.0	NA	NA	NA	+6.0	-9.0	-18.0	+4.0
Texas -----	+10,164	+23	-3,822	+336	+123	-1,697	+1,664	+6,791
	+110.0	+35.0	-4.0	+41.0	+1.0	-0	+2.0	+2.0
TOTALS -----	+138,269	-4,586	-2,207	-15,937	-742	-79,133	-7,116	+28,548
	+153.0	-31.0	-2.0	-10.0	-0.7	-9.0	-3.0	+2.0

that several islands, including Eastham, Nauset, and Monomoy, are protected as national seashores, national wildlife refuges, or state parks. In 1972–75, besides the 17,000 acres in urban or built-up land, the New York Bight islands had approximately 22,000 acres in barren land (primarily beaches), 14,000 acres in wetland, 6,000 acres in rangeland (vegetated dunes), and 2,200 acres in forest land.

Land use and land cover change on these islands was minimal between 1945–55 and 1972–75, except in the urban or built-up category where there was a 39 percent or 6,700-acre increase. Contributing to this were corresponding decreases in forest land (900 acres), rangeland (300 acres), and wetland (300 acres). Interestingly, the total Group 2 area increased by nearly 6,000 acres. Such a large increase in total area is difficult to explain with certainty since it is unlikely that filling operations accounted for so much additional land area. It is more probable that part of this measured change is erroneous, and is the cumulative effect of smaller inaccuracies in interpretation and measurement. Of the changes in total group area, between 1945–55 and 1972–75, Group 2 with 10 percent had the largest percentage area change for all eight groups. Most of the other changes fell within four percent, a range almost entirely attributable to error in interpretation and to mensuration technique. The statistical significance of measured changes is discussed later in the report.

Continuing south along the coast, from Sandy Hook, N.J. to North Island, S.C., are the Group 3 or Mid-

Atlantic barrier islands (App. II, figs. 28–52). This entire group forms a part of the seaward edge of the continent's eastern coastal plain. These islands are characterized by broad sandy beaches, and are primarily composed of Pleistocene marine sediments (Dolan, 1970; King and Beikman, 1974). There are 53 barrier islands in the Mid-Atlantic group, with a total area of over 300,000 acres. Of the 53 islands, 35 contain some urban development. Only 6 however, Sandy Hook, Barnegat, Long Beach, Atlantic City, Ocean City, and Fenwick South, are more than 50 percent urbanized, and none are totally urbanized.

Wetland vegetation is the predominant land cover type throughout this group with nearly 159,000 acres, or just over half the total group area. Wetlands form a nearly continuous strip along the back-bay side of these barrier islands. The next major area, with over 73,000 acres or 24 percent in barren land, is primarily ocean-front beach and dunes. Urban or built-up land is third in extent with 52,000 acres or 17 percent. Most of this consists of resort cities, such as Wildwood, Rehoboth, Bethany, and Ocean City. These areas are characterized by extensive commercial sectors (hotels, motels, and restaurants) and large seasonal population fluctuations. There are, however, some permanent urbanized communities in Group 3 that maintain a more stable population and economy throughout the year. The New Jersey coastline between Atlantic City and Ocean City is the best example. Urban development on these Mid-Atlantic barrier islands has typically located along the primary dune line, and extended back through the adjacent

grassland zone. In highly developed areas, building has continued even farther back-island, into the marshlands bordering the back-bays.

Between 1945-55 and 1972-75 the most significant changes occurring on the Mid-Atlantic islands were in the urban or built-up and wetland categories. As with Group 2, the largest change occurred in the area of urban land, which doubled, increasing by nearly 26,000 acres. Most of this urban expansion was into wetlands, which decreased by nearly 21,000 acres or 12 percent.

Group 4, the Sea Islands, extends from South Island, S.C. to Cumberland Island, Ga. (App. II, figs. 53-62). These 44 islands are also a part of the eastern coastal plain but, unlike their Mid-Atlantic counterparts, are primarily composed of Holocene, not Pleistocene, sediments (King and Beikman, 1974). They are further differentiated from the Group 3 islands by their physical structure. While the Mid-Atlantic islands are primarily a system of elongated sandy beaches, the Sea Islands exhibit no such elongated, interconnecting beach characteristic. These islands stand more as individual outliers of a broad wetland-estuarine system.

Group 4 has a total area of 312,000 acres: of its 44 islands, only 15 have any urban development, and only one, Sullivans, is more than 50 percent urbanized. The Sea Islands are largely dominated by wetland vegetation which totals over 194,000 acres, or more than 60 percent of their total area. Forest land also occupies a relatively large area with over 66,000 acres. Urban or built-up land, on the other hand, constitutes less than 7 percent of the total area with just under 20,000 acres. Even so, there has been a threefold or 13,000 acre increase in urban land use between 1945-55 and 1972-75. Accompanying this urban area increase were corresponding decreases in the area of agricultural land by over 4,000 acres (-39 percent), and in wetland by over 9,000 acres (-5 percent).

Group 5, the Florida Atlantic barrier islands, begins at Amelia Island and continues to Key Biscayne (App. II, figs. 63-77). The first 12 of its 22 islands, including Hutchinson Island, are composed of Holocene materials, and the remaining 10, from Jupiter Island south, of Pleistocene materials (King and Beikman, 1974). All these islands are more like those in Group 3, and less like those in Group 4, in that they form an elongated beach continuum rather than a series of dissected islands.

Based on the 1972-75 data, 21 of these 22 islands show some urban development. Of these, 11 are more than 50 percent urbanized, and 1 (Hillsboro Beach) is totally urbanized. Out of a total area of about 150,000 acres, almost 70,000 acres are in urban or built-up land. The second largest category is wetland, comprising nearly 40,000 acres or 26 percent of the total area. Forest land occupies about 27,000 acres, or roughly 18 percent of the Group 5 area, while barren land covers nearly 11,000 acres or just over 7 percent of the total.

Between 1945-55 and 1972-75 changes on the Florida Atlantic barrier islands were extensive. As in the Group 4 islands, urban or built-up land, for example, sustained a threefold increase, corresponding in this case to over 47,000 acres. Balancing this urban increase were marked decreases in several other land use and land cover categories. Forest land was most affected, losing over 18,000 acres (-41 percent). Wetland area decreased by more than 14,000 acres (-27 percent), and barren land lost over 10,000 acres (-49 percent).

Immediately adjacent to the Florida Atlantic barrier islands, on the south side, are the Florida Keys. Geologically, the Keys form a break in the chain of Atlantic and Gulf coast barrier islands. Whereas Florida's barrier islands are formed of sand, the Florida Keys are formed of limestone. As a result of this morphological distinction, and since the Florida Keys are a relatively small proportion of all barrier islands, the Barrier Island work group elected not to include these in its study.

The Group 6 or Eastern Gulf Coast barrier islands, form a chain northwestward from the Keys along the Gulf of Mexico, beginning at Cape Sable, Fla., and continuing to Cat Island, Miss., (App. II, figs. 78-104). This group includes 68 islands of varying geological composition. Most of the Florida barrier islands are composed of either Eocene, Miocene, or Pleistocene sediments. However, all the Alabama and Mississippi islands are composed of Holocene materials (King and Beikman, 1974), and many are backed by extensive marshlands.

As a group, the Eastern Gulf Coast barrier islands are much less developed than the Florida Atlantic islands. Of the 68, only 39 or 57 percent have some urban development, and of these only 12 islands (18 percent) are more than 50 percent urbanized. None are totally urbanized. Based on the 1972-75 data, the Group 6 islands have a total area of over 406,000 acres. Wetland, the largest area, amounts to more than 217,000 acres or 54 percent of the total. Water bodies, primarily as embayments, form the next largest area with nearly 76,000 acres (19 percent), while barren land, forest land, and urban or built-up land all total approximately 36,000 acres or roughly 9 percent each.

Between 1945-55 and 1972-75, the greatest change on the Group 6 islands occurred in urban or built-up land, which increased by slightly more than 28,000 acres. This considerable gain (302 percent) coincided with losses of 12 percent in wetland (29,000 acres), of 3 percent in water bodies (-2,600 acres), and 13 percent in barren lands (-5,400 acres). There were also gains of 436 percent in rangeland (+2,600 acres), and of 27 percent in forest land (+7,800 acres).

Farther to the west in the Gulf of Mexico, stretching from the Chandeleur Islands to Isle Dernieres, are the Louisiana, or Group 7, barrier islands (App. II, figs. 105-112). Totalling nearly 39,000 acres, this entire

group is composed of fine-grained deltaic deposits of Holocene age from the Mississippi River (Dolan, 1970; King and Beikman, 1974). Of these 18 islands, only Grand Isle is linked to the mainland by road. Most of the others form the leading edge of an isolated and segmented wetland-estuarine system.

Only 8 of the Louisiana islands contain any urban development and all of those are less than half urbanized. Grand Isle is the most extensively developed, with 48 percent of its area or 1,900 acres in urban or built-up land. The major portion of the group's land area consists of 24,000 acres in wetlands, or 62 percent of the total area. Urban or built-up land is next in extent with just over 6,700 acres or 18 percent. A large part of this usage is related to the offshore oil and natural gas industry, with a comparatively small part devoted to residential or recreational land. Barren land occupies roughly the same area as urban or built-up land, just over 6,200 acres.

The basic pattern of land use and land cover change on the Louisiana barrier islands is typical of most other groups between 1945-55 and 1972-75. Urban or built-up land area has increased, while wetland area has decreased. The magnitude of change was, however, greater in Louisiana than in most other island groups. For example, in the Louisiana group with less than 39,000 total acres, the urban or built-up land area increased by more than 5,000 acres. Whereas in 1945-55 urban or built-up land accounted for 4.5 percent of the total Group 7 area, by 1972-75 this figure had soared to 17.5 percent, an increase of 13 percentage points. Within most other barrier island groups, the percentage of urban or built-up land increased by only 3 to 9 points during the same period. The development of Louisiana's offshore petroleum industry is the primary reason for this difference.

The Texas barrier island group, the eighth and final in this regional stratification, ranges from Bolivar Peninsula to Brazos Island, Texas (App. II, figs. 113-125). Much of the backing coastal zone is composed of Pleistocene materials, although the islands themselves are almost entirely composed of Holocene deposits (King and Beikman, 1974). Their physical appearance is similar to the Mid-Atlantic barrier islands, with an interconnecting system of elongated sandy beaches backed by an extensive wetland-estuarine system.

Of the eight island groups, Texas has the second largest total area with nearly 384,000 acres. Also, with 16 it has the fewest number of islands, making them some of the largest along the Atlantic and Gulf coasts. Of these 16 islands, 11 contain some urban or built-up land. None, however, are more than 50 percent urbanized. Galveston Island is the most extensively developed, with 33 percent of its land area in an urban condition. To put this value in perspective, however, although only one-third of the area, it corresponds to nearly 10,000 acres, giving Galveston one of the largest proportions in

urban or built-up land of all 282 barrier islands. In Group 8, as with most other groups, the largest individual land use and land cover category is wetland, with about 186,000 acres or 49 percent of the total area. This is followed by more than 85,000 acres in rangeland (22 percent), 82,000 acres in barren land (21 percent), and slightly less than 20,000 acres in urban or built-up land (5 percent).

Despite the diversity of land use and land cover types in Group 8, land use and land cover changes between 1945-55 and 1972-75 were dominated by 2 categories, urban or built-up land and rangeland. Urban or built-up land more than doubled during this period, increasing by over 10,000 acres. Rangeland, on the other hand, decreased in area by nearly 4,000 acres.

### STATISTICAL SIGNIFICANCE

At the beginning of the data compilation process it was recognized that inherent error factors exist in photointerpretation, area measurement, and change mensuration procedures. Although some assumptions can be made in assessing the accuracy of a given data set based on consistency factors of interpreters and equipment, these assumptions cannot be applied to all compilation variables. Thus, to validate assessments of land use and land cover changes for the barrier islands, this investigator needed to know if the values of change, as measured by a planimeter, were real, or part of the inherent error involved in the mapping and measuring technique. A particular concern was with the statistical significance of the change values that resulted from mapping work done at two different times, with different types of photography, and at several different scales.

To determine the amount of change which could be attributable to procedural "noise" versus real change, a statistical technique was designed and applied to the land use and land cover change data. Based on the standard error factor for mapping at various scales, and the areas of measured categories, the expected value of area change—that is, the change resulting from inherent technique errors—was calculated. A test of the null hypothesis, which assumes the change in area to be due to measurement error, was then employed to determine whether or not the indicated change was caused by error in measurement alone. If the null hypothesis was rejected (indicating that the change in area was probably real) then an alternative hypothesis, which assumes the change in area to be real, was tested. The alternative hypothesis was evaluated at the 95 percent level of confidence using the Student's t-statistic. Acceptance of the alternative hypothesis indicates that the change in land use area was real. The results of this evaluation are presented in table 8.

As table 8 shows, it is possible to discern several significant statistical characteristics in the study's land

TABLE 8.—*Statistical significance of land use and land cover area changes by regional group*

[The "N" signifies acceptance of null hypothesis meaning that the change measured was probably due to measurement error. The "A" signifies acceptance of the alternative hypothesis meaning that the change measured was probably real, at the 95 percent confidence level]

Island group	Urban or built-up land	Agricultural land	Range-land	Forest land	Water bodies	Wet-land	Barren land
New England	A		A			A	N
New York Bight	A	N	N	A	N	N	N
Mid-Atlantic	A	N		N	N	A	A
Sea Islands	A	A	A	A	A	A	A
Florida Atlantic	A	A	N	A	A	A	A
East Gulf Coast	A	A	A	A	A	A	A
Louisiana	A				N	A	A
Texas	A	N	A	N	N	N	N

use and land cover change data. For example, in all 8 of the barrier island regional groups, the measured change in urban or built-up land area was determined to be statistically significant at the 95 percent level of confidence. This determination indicates that most of the area change measured was real, that is, not attributable to inherent measurement error. The relatively large increases in each region's urban or built-up area, which ranged from about 2,000 acres in the New England group to about 47,000 acres in the Florida Atlantic group, accounted for the statistical determination that the changes were real rather than inherently erroneous.

In contrast to this condition, area changes in agricultural land were not as statistically significant. Of the 8 island groups, only 5 contained any agricultural land—New York Bight, Mid-Atlantic, Sea Islands, Florida Atlantic, and Texas. Of these, the Sea Islands and the Florida groups were the only 2 with statistically significant area changes between 1945–55 and 1972–75. In both cases, moreover, the area of change was sizeable. The Sea Islands agricultural area dropped from about 10,900 acres to 6,600 acres, for a 4,300-acre loss during the 25-year period. In the same period, the same land use in the Florida Atlantic islands dropped from 3,100 acres to 2,300 acres, for an 800-acre loss. Comparatively, agricultural land area changes in the other 3 island groups were small, amounting to about 20 acres, 40 acres, and 250 acres respectively for the islands of Texas, New York Bight, and Mid-Atlantic, which accounted for the acceptance of the null hypothesis for these groups.

**CONCLUSIONS**

Land use and land cover patterns on barrier islands vary widely in response to geographically diverse natural, cultural, and economic conditions. There are, however, several general patterns which prevail over most of the Atlantic and Gulf coast islands. For example, wetland and barren land (primarily beaches and

dunes) are naturally dominant cover conditions and are often accompanied by sizeable areas of forest land. Of the nearly 1.7 million acres making up the 282 barrier islands, wetland covers roughly half or 840,000 acres. Barren land occupies another 15 percent or 250,000 acres, while forest land covers slightly less than 10 percent or over 150,000 acres. The area of urban or built-up land is slightly less than the area of barren land, which means that four categories—wetland, urban or built-up land, barren land, and forest land—account for nearly 90 percent of the total 2,600-square mile area of Atlantic and Gulf Coast barrier islands.

From a regional perspective, the most developed barrier islands are those in the Florida Atlantic group. Not only do these Group 5 islands have the largest total urbanized acreage, nearly 70,000 acres, but they also have, with more than 46 percent, the largest proportion of urban or built-up area of any group. Identification of the least developed group among the barrier islands depends on the criteria used to determine extent or degree of development. For example, with about 6,300 acres, the New England group has the smallest urban or built-up area. Accounting for nearly 43 percent of the Group 1 land area, however, this value represents the second largest urban area percentage among all the groups. New England also has the smallest total area among the 8 groups. The Texas group, on the other hand, has over 19,000 urbanized acres (more than three times that in New England), yet maintains the smallest urbanized percent of total area at just over 5 percent. Texas has the second largest total group area with over 380,000 acres.

The most significant aspect of barrier island land use and land cover patterns relates to recent changes. During the intervening period from 1945–55 to 1972–75, all categories of land use and land cover decreased except urban or built-up land, which increased by 138,000 acres. Wetlands were most affected by this urban development, losing nearly 80,000 acres. Forest land lost about 16,000 acres, while barren land decreased by 7,000. The most significant regional changes occurred on the Group 5 Florida Atlantic barrier islands where urban or built-up land increased by over 47,000 acres, while forest land, wetland, barren land, and agricultural land all decreased by about 20,000, 15,000, 10,000, and 1,000 acres respectively. The Group 6 Eastern Gulf Coast barrier islands also sustained significant changes during the 1945–55 to 1972–75 period. Urbanized land increased by more than 28,000 acres and forest land increased by nearly 8,000 acres, while wetlands were reduced by 30,000 acres and barren land lost over 5,000 acres. Although the two Florida groups appear to have undergone some of the largest changes recently, the land use and land cover data presented in this report indicate that barrier islands from Maine to Texas have experienced substantial increases in urban land use since World War II.

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## APPENDIX I

Area values of land use and land cover on Atlantic and Gulf Coast barrier islands,  
1945-55 and 1972-75 with changes (tables 9-27).

Throughout the following broad measure tables, acres are in **boldface type**, percents in lightface; dashes (---) indicate negligible mapping data or none available; NA indicates category not applicable; + sign alone indicates increase not compared.





TABLE 11.—Changes in area values of Level I land use and land cover for 27 barrier islands off the Massachusetts coast

Name of island	Years compared		Urban or built-up land		Agricultural land		Rangeland		Forest land		Water bodies		Wetland		Barren land		Year totals
	Acres	%	Acres	%	Acres	%	Acres	%	Acres	%	Acres	%	Acres	%	Acres	%	
Salsbury	1945-55		327	26.1	NA	NA	NA	NA	NA	NA	NA	NA	907	72.6	16	1.3	1,250
	1972-75	Δ	560	40.6	NA	NA	NA	NA	NA	NA	NA	NA	760	55.1	60	4.3	1,380
Plum Island	1945-55		358	12.1	NA	NA	NA	NA	NA	NA	NA	NA	1,668	56.4	933	31.5	2,959
	1972-75	Δ	531	15.1	NA	NA	NA	NA	NA	NA	NA	NA	1,792	51.1	1,184	33.8	3,507
Castle Neck	1945-55		-0-	0.0	NA	NA	NA	NA	416	27.0	NA	NA	413	26.8	714	46.2	1,543
	1972-75	Δ	13	0.8	NA	NA	NA	NA	602	36.9	NA	NA	461	28.2	557	34.1	1,633
Towel	1945-55		125	20.6	NA	NA	NA	NA	104	17.2	NA	NA	257	42.4	120	19.8	606
	1972-75	Δ	214	32.0	NA	NA	NA	NA	93	13.9	NA	NA	275	41.1	87	13.0	669
Nahant	1945-55		76	36.7	NA	NA	NA	NA	-11	-11.0	NA	NA	NA	NA	131	63.3	207
	1972-75	Δ	122	41.4	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	173	58.6	295
Revere Beach	1945-55		453	59.7	NA	NA	NA	NA	NA	NA	NA	NA	305	30.3	NA	NA	758
	1972-75	Δ	378	53.7	NA	NA	NA	NA	NA	NA	NA	NA	326	46.3	NA	NA	704
Nantasket Beach	1945-55		-75	-17.0	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	718
	1972-75	Δ	718	100.0	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	922
Humarock	1945-55		1,015	60.2	NA	NA	NA	NA	NA	NA	NA	NA	670	39.8	NA	NA	1,685
	1972-75	Δ	1,459	82.6	NA	NA	NA	NA	NA	NA	NA	NA	307	17.4	NA	NA	1,766
Duxbury	1945-55		147	13.1	NA	NA	NA	NA	NA	NA	NA	NA	330	29.5	643	57.6	1,120
	1972-75	Δ	147	13.2	NA	NA	NA	NA	NA	NA	NA	NA	-0-	0.0	966	86.8	1,113
Long Beach	1945-55		-0-	0.0	NA	NA	NA	NA	NA	NA	NA	NA	-330	-100.0	+323	+50.0	-1.0
	1972-75	Δ	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	165	100.0	165
Sandy Neck	1945-55		NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	77	100.0	77
	1972-75	Δ	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	-88	-53.0	-53.0
Nobscusset Point	1945-55		343	41.8	NA	NA	336	13.1	NA	NA	NA	NA	1,207	46.9	1,030	40.0	2,573
	1972-75	Δ	621	58.4	NA	NA	294	10.3	NA	NA	NA	NA	1,504	52.4	1,069	37.3	2,967
Great Island	1945-55		278	81.0	NA	NA	-42	-13.0	123	15.0	NA	NA	202	24.6	152	18.6	820
	1972-75	Δ	NA	NA	NA	NA	NA	NA	-0-	0.0	NA	NA	250	23.5	192	18.1	1,063
Provincelands	1945-55		543	7.1	NA	NA	2,386	31.0	337	75.4	NA	NA	110	24.6	NA	NA	447
	1972-75	Δ	1,357	16.1	NA	NA	1,376	16.3	397	83.8	NA	NA	77	16.2	NA	NA	474
			+814	+150.0	NA	NA	-1,010	-42.0	+60	+18.0	NA	NA	-43	-43.0	NA	NA	7,658
					NA	NA			NA	NA	4.0	NA	282	3.7	4,169	54.2	8,454
					NA	NA			NA	NA	5.7	NA	-0-	0.0	5,235	61.9	8,454
					NA	NA			NA	NA	+58	NA	-232	-100.0	+1,066	+26.0	+10.0

TABLE 11.—Changes in area values of Level I land use and land cover for 27 barrier islands off the Massachusetts coast—Continued

Name of island	Years compared	Urban or built-up land		Agricultural land		Rangeland		Forest land		Water bodies		Wetland		Barren land		Year totals
		Acres	%	Acres	%	Acres	%	Acres	%	Acres	%	Acres	%	Acres	%	
Eastham	1945-55	-0	0.0	NA	NA	NA	NA	NA	NA	NA	NA	674	82.6	142	17.4	816
	1972-75	166	18.5	NA	NA	NA	NA	NA	NA	NA	NA	730	81.5	-0	0.0	896
Nauset	1945-55	193	8.6	NA	NA	NA	NA	NA	NA	NA	NA	837	37.2	1,219	54.2	2,249
	1972-75	672	21.5	NA	NA	NA	NA	NA	NA	NA	NA	1,312	41.9	1,146	36.6	3,130
Monomoy	1945-55	NA	NA	NA	NA	NA	NA	164	6.1	182	6.7	439	16.1	1,935	71.1	2,720
	1972-75	NA	NA	NA	NA	NA	NA	-0	0.0	58	2.2	166	6.3	2,400	91.5	2,624
Coatue	1945-55	NA	NA	NA	NA	511	29.9	NA	NA	38	2.2	261	15.3	899	52.6	1,709
	1972-75	NA	NA	NA	NA	800	45.6	NA	NA	38	2.2	390	22.2	525	30.0	1,753
Madaket	1945-55	70	23.0	NA	NA	NA	NA	NA	NA	NA	NA	142	46.6	93	30.4	305
	1972-75	77	100.0	NA	NA	NA	NA	NA	NA	NA	NA	-0	0.0	-0	0.0	77
Muskeget Island	1945-55	NA	NA	NA	NA	30	9.1	NA	NA	NA	NA	NA	NA	298	90.8	328
	1972-75	NA	NA	NA	NA	-0	0.0	NA	NA	NA	NA	NA	NA	346	100.0	346
Cape Poge	1945-55	NA	NA	NA	NA	302	56.6	NA	NA	NA	NA	NA	NA	232	43.4	534
	1972-75	NA	NA	NA	NA	474	69.2	NA	NA	NA	NA	NA	NA	211	30.8	685
Katama Bay	1945-55	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	103	100.0	103
	1972-75	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	179	100.0	179
Edgartown Great Ponds	1945-55	NA	NA	NA	NA	236	58.6	NA	NA	NA	NA	NA	NA	204	46.3	440
	1972-75	NA	NA	NA	NA	320	100.0	NA	NA	NA	NA	NA	NA	-0	0.0	320
Tisbury Great Ponds	1945-55	-0	0.0	NA	NA	38	16.1	NA	NA	NA	NA	NA	NA	198	83.9	236
	1972-75	6	1.9	NA	NA	307	98.1	NA	NA	NA	NA	NA	NA	-0	0.0	313
Nashawena	1945-55	NA	NA	NA	NA	120	71.9	NA	NA	NA	NA	NA	NA	47	28.1	167
	1972-75	NA	NA	NA	NA	128	100.0	NA	NA	NA	NA	NA	NA	-0	0.0	128
Cuttyhunk Island	1945-55	19	2.8	NA	NA	614	91.5	38	5.7	NA	NA	NA	NA	NA	NA	671
	1972-75	19	3.0	NA	NA	608	97.0	-0	0.0	NA	NA	NA	NA	NA	NA	627
Horseneck Beach	1945-55	132	9.0	11	0.8	220	15.0	128	8.7	NA	NA	904	61.9	68	4.6	1,463
	1972-75	864	49.1	70	4.0	147	8.3	128	7.3	NA	NA	550	31.3	-0	0.0	1,769
Category totals and Change totals	1945-55	4,519	13.2	11	0.1	4,793	14.0	1,310	3.8	528	1.5	9,608	28.0	13,511	39.4	34,280
	1972-75	8,128	21.5	70	0.2	4,454	11.8	1,220	3.2	582	1.5	8,900	23.6	14,407	38.2	37,761
Change totals		+3,609	+80.0	+59	+536.0	-339	-7.0	-90	-7.0	+54	+10.0	-708	-7.0	+896	+7.0	+10.0

TABLE 12.—Changes in area values of Level I land use and land cover for 6 barrier islands off the Rhode Island coast

Name of island	Years compared	Urban or built-up land		Agricultural land		Rangeland		Forest land		Water bodies		Wetland		Barren land		Year totals
		Acres	%	Acres	%	Acres	%	Acres	%	Acres	%	Acres	%	Acres	%	
Charlestown	1945-55	547	23.9	159	6.9	NA	NA	74	3.2	226	9.9	815	35.6	472	20.5	2,293
	1972-75	928	37.1	221	8.8	NA	NA	162	6.5	196	7.8	996	39.8	0-	0.0	2,503
Weekapaug	1945-55	117	36.1	NA	NA	NA	NA	NA	NA	NA	NA	207	63.9	NA	NA	324
	1972-75	170	54.0	NA	NA	NA	NA	NA	NA	NA	NA	145	46.0	NA	NA	315
Atlantic	1945-55	109	25.9	NA	NA	NA	NA	NA	NA	NA	NA	312	74.1	NA	NA	421
	1972-75	128	30.7	NA	NA	NA	NA	NA	NA	NA	NA	289	69.3	NA	NA	417
Napatree 1	1945-55	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	103	100.0	103
	1972-75	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Stonington 1	1945-55	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	63	100.0	63
	1972-75	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Block Island	1945-55	NA	NA	25	8.7	153	52.9	NA	NA	17	5.9	NA	NA	94	32.5	289
	1972-75	NA	NA	25	8.7	153	52.9	NA	NA	17	5.9	NA	NA	94	37.5	289
Category totals and Change totals	1945-55	773	23.3	184	5.5	153	4.6	74	2.2	243	7.3	1,334	40.1	566	17.0	3,327
	1972-75	1,226	34.8	246	7.0	153	4.3	162	4.6	213	6.0	1,430	40.6	94	2.7	3,524
		+453	+59.0	+62	+34.0	0-	0.0	+88	+119.0	-30	-12.0	+96	+7.0	-472	-83.0	+6.0

1 No photographic coverage for 1945-55; totals do not include data for these islands.

TABLE 13.—Changes in area values of Level I land use and land cover for 2 barrier islands off the Connecticut coast

Name of island	Years compared	Urban or built-up land		Agricultural land		Rangeland		Forest land		Water bodies		Wetland		Barren land		Year totals
		Acres	%	Acres	%	Acres	%	Acres	%	Acres	%	Acres	%	Acres	%	
Hammonasset Point	1945-55	0-	0.0	NA	NA	NA	NA	NA	NA	NA	NA	778	91.9	69	8.1	847
	1972-75	250	28.7	NA	NA	NA	NA	NA	NA	NA	NA	563	64.6	58	6.7	871
Black Rock	1945-55	264	69.5	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	116	30.5	380
	1972-75	326	67.1	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	160	32.9	486
Category totals and Change totals	1945-55	264	21.5	NA	NA	NA	NA	NA	NA	NA	NA	778	63.4	185	15.1	1,227
	1972-75	576	42.4	NA	NA	NA	NA	NA	NA	NA	NA	563	41.5	218	16.1	1,357
		+312	+118.0	0	0.0	0	0.0	0	0.0	0	0.0	-215	-28.0	+33	+18.0	+11.0

ON ATLANTIC AND GULF COAST BARRIER ISLANDS FOR 1942-55 AND 1972-75

TABLE 14.—Changes in area values of Level I land use and land cover for 15 barrier islands off the New York coast

Name of island	Years compared	Urban or built-up land		Agricultural land		Rangeland		Forest land		Water bodies		Wetland		Barren land		Year totals
		Acres	%	Acres	%	Acres	%	Acres	%	Acres	%	Acres	%	Acres	%	
Fisher Island	1945-55	478	19.7	NA	NA	577	23.9	1,267	52.5	93	3.9	-0-	0.0	-0-	0.0	2,415
	1972-75	718	30.0	NA	NA	511	21.3	1,025	42.7	119	5.0	17	0.7	9	0.3	2,399
Gardiners Island	1945-55	NA	NA	358	19.8	947	52.4	93	5.1	220	12.2	NA	NA	189	10.5	1,897
	1972-75	NA	NA	273	15.0	1,069	58.4	94	5.1	269	14.7	NA	NA	126	6.8	1,881
Fireplace	1945-55	30	30.3	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	69	69.7	99
	1972-75	73	83.0	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	15	17.0	88
Maidstone Park	1945-55	-0-	0.0	NA	NA	NA	NA	NA	NA	NA	NA	40	26.6	100	73.4	140
	1972-75	36	31.3	NA	NA	NA	NA	NA	NA	NA	NA	-0-	0.0	79	68.7	115
Northwest Harbor	1945-55	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	-40	-100.0	-21	-21.0	-18.0
	1972-75	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	90	100.0	90
Shelter Island	1945-55	163	32.3	NA	NA	NA	NA	282	56.0	NA	NA	NA	NA	59	11.7	594
	1972-75	365	66.4	NA	NA	NA	NA	134	24.4	NA	NA	NA	NA	51	9.2	550
Orient Beach	1945-55	NA	NA	NA	NA	NA	NA	-148	-52.0	NA	NA	NA	NA	-8	-14.0	+9.0
	1972-75	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	365	100.0	365
North Haven	1945-55	47	31.3	NA	NA	NA	NA	101	68.7	NA	NA	NA	NA	NA	NA	148
	1972-75	147	100.0	NA	NA	NA	NA	-0-	0.0	NA	NA	NA	NA	NA	NA	147
Morton	1945-55	NA	NA	NA	NA	NA	NA	149	66.5	NA	NA	NA	NA	75	33.5	224
	1972-75	NA	NA	NA	NA	NA	NA	183	82.4	NA	NA	NA	NA	39	17.6	222
Southampton	1945-55	75	14.4	NA	NA	NA	NA	+34	+23.0	NA	NA	NA	NA	-36	-48.0	-1.0
	1972-75	137	23.0	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	446	85.6	521
Hampton	1945-55	738	32.6	NA	NA	NA	NA	NA	NA	NA	NA	799	35.2	729	32.2	2,266
	1972-75	1,028	38.4	NA	NA	NA	NA	NA	NA	NA	NA	449	18.2	1,159	43.4	2,635
Fire Island	1945-55	935	14.8	NA	NA	NA	NA	336	5.3	NA	NA	1,788	28.4	3,242	51.5	6,301
	1972-75	1,881	27.1	NA	NA	NA	NA	72	1.0	NA	NA	1,522	21.9	3,466	50.0	6,941
Jones Beach Island	1945-55	759	9.2	NA	NA	NA	NA	-264	-79.0	44	0.5	-266	-15.0	+224	+7.0	+10.0
	1972-75	1,191	12.3	NA	NA	NA	NA	NA	NA	162	1.6	4,232	51.3	3,224	39.0	8,259
Long Beach	1945-55	2,237	68.6	NA	NA	NA	NA	NA	NA	NA	NA	596	18.3	-109	-3.0	+17.0
	1972-75	2,927	83.7	NA	NA	NA	NA	NA	NA	NA	NA	162	4.6	3,115	32.2	9,687
Rockaway	1945-55	2,678	77.1	NA	NA	NA	NA	NA	NA	NA	NA	-434	-73.0	797	22.9	3,475
	1972-75	3,075	80.0	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	771	20.0	3,846
Category totals and Change totals	1945-55	8,140	27.2	358	1.2	1,524	5.1	2,228	7.5	357	1.2	7,455	25.0	9,813	32.8	29,875
	1972-75	11,578	35.0	273	0.8	1,580	4.8	1,508	4.5	550	1.7	7,368	23.0	10,171	30.7	33,028
		+3,438	+42.0	-85	-24.0	+56	+4.0	-720	-32.0	+193	+54.0	-87	-1.0	+358	+4.0	+11.0

TABLE 15.—Changes in area values of Level I land use and land cover for 10 barrier islands off the New Jersey coast

Name of island	Years compared	Urban or built-up land		Agricultural land		Rangeland		Forest land		Water bodies		Wetland		Barren land		Year totals
		Acres	%	Acres	%	Acres	%	Acres	%	Acres	%	Acres	%	Acres	%	
Sandy Hook	1945-55	1,355	58.6	NA	NA	NA	NA	613	26.5	NA	NA	132	5.7	214	9.2	2,314
	1972-75	2,406	80.7	NA	NA	NA	NA	96	3.2	NA	NA	154	5.2	326	10.9	2,982
	Δ	+1,151	+78.0					+507	-84.0			+22	+17.0	+112	+52.0	+299.0
Barnegat	1945-55	3,117	49.2	NA	NA	NA	NA	124	2.0	32	0.5	1,791	28.2	1,277	20.1	6,341
	1972-75	3,302	51.6	NA	NA	NA	NA	83	1.3	64	1.0	1,869	29.2	1,082	16.9	6,400
	Δ	+185	+6.0					-41	-33.0	+32	+100.0	+78	+4.0	-195	-15.0	+1.0
Long Beach Island	1945-55	3,138	44.6	NA	NA	NA	NA	NA	NA	NA	NA	1,561	22.2	2,341	33.2	7,040
	1972-75	3,949	58.5	NA	NA	NA	NA	NA	NA	NA	NA	1,216	18.0	1,581	23.5	6,746
	Δ	+811	+26.0					NA	NA	NA	NA	-345	-22.0	-760	-32.0	-4.0
Little Beach Island (Pullen Island)	1945-55	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	1,081	61.0	691	39.0	1,772
	1972-75	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	1,184	62.3	717	37.7	1,901
	Δ							NA	NA	NA	NA	+103	+10.0	+26	+4.0	+7.0
Brigantine	1945-55	715	13.6	88	1.7	NA	NA	301	5.7	26	0.5	2,516	47.9	1,611	30.6	5,257
	1972-75	973	20.0	224	4.6	NA	NA	346	7.1	32	0.7	2,112	43.5	1,171	24.1	4,858
	Δ	+258	+36.0		+154.0			+45	+15.0	+6	+23.0	-404	-16.0	-440	-27.0	-8.0
Atlantic City	1945-55	3,511	59.8	-0-	0.0	NA	NA	180	3.1	297	5.0	897	15.3	985	16.8	5,870
	1972-75	4,467	71.2	96	1.5	NA	NA	102	1.6	320	5.1	454	7.2	832	13.4	6,271
	Δ	+956	+27.0	+96	+			-78	-43.0	+23	+8.0	-443	-49.0	-153	-16.0	+7.0
Ocean City	1945-55	1,847	40.8	NA	NA	NA	NA	NA	NA	-0-	0.0	1,408	31.1	1,272	28.1	4,527
	1972-75	2,227	50.2	NA	NA	NA	NA	NA	NA	13	0.3	1,082	24.4	1,114	25.1	4,436
	Δ	+380	+21.0					NA	NA	+13	+	-326	-23.0	-158	-12.0	-2.0
Ladlam	1945-55	569	16.4	NA	NA	NA	NA	NA	NA	672	19.3	1,511	43.5	721	20.8	3,473
	1972-75	902	25.8	NA	NA	NA	NA	NA	NA	704	20.1	1,197	34.2	698	19.9	3,501
	Δ	+333	+59.0					NA	NA	+32	+5.0	-314	-21.0	-23	-3.0	+1.0
Seven Mile Beach	1945-55	1,382	26.5	-0-	0.0	NA	NA	105	2.0	64	1.2	2,586	49.6	1,077	20.7	5,214
	1972-75	2,048	38.2	38	0.7	NA	NA	-0-	0.0	115	2.2	2,054	38.3	1,101	20.6	5,356
	Δ	+666	+48.0	+38	+			-105	-100.0	+51	+80.0	-532	-21.0	+24	+2.0	+3.0
Wildwood	1945-55	2,112	38.2	NA	NA	NA	NA	NA	NA	512	9.2	2,218	40.1	692	12.5	5,534
	1972-75	2,445	44.4	NA	NA	NA	NA	NA	NA	576	10.5	1,933	35.1	550	10.0	5,504
	Δ	+333	+16.0					NA	NA	+64	+13.0	-285	-13.0	-142	-21.0	-1.0
Category totals and Change totals	1945-55	17,746	37.4	88	0.2	NA	NA	1,323	2.8	1,603	3.4	15,701	33.2	10,881	23.0	47,342
	1972-75	22,719	47.4	358	0.8	NA	NA	627	1.3	1,824	3.8	13,255	27.6	9,172	19.1	47,955
	Δ	+4,973	+28.0	+270	+307.0			-696	-53.0	+221	+14.0	-2,446	-16.0	-1,709	-16.0	+2.0

TABLE 16.—Changes in area values of Level I land use and land cover for 2 barrier islands off the Delaware coast

Name of island	Years compared	Urban or built-up land		Agricultural land		Rangeland		Forest land		Water bodies		Wetland		Barren land		Year totals
		Acres	%	Acres	%	Acres	%	Acres	%	Acres	%	Acres	%	Acres	%	
Rehoboth	1945-55	1,170	17.6	NA	NA	NA	NA	182	2.7	53	0.8	3,976	60.1	1,238	18.8	6,619
	1972-75	1,606	24.0	NA	NA	NA	NA	-0-	0.0	230	3.4	2,995	44.9	1,850	27.7	6,681
	Δ	+436	+37.0					-182	-100.0	+177	+334.0	-981	-25.0	+612	+49.0	+1.0
Fenwick Island North	1945-55	337	9.7	101	2.9	NA	NA	514	14.8	61	1.8	1,735	50.0	719	20.8	3,467
	1972-75	1,850	39.3	26	0.8	NA	NA	64	0.6	32	0.9	1,120	32.8	838	24.4	3,430
	Δ	+1,013	+300.0	-75	-74.0			-450	-87.0	-29	-48.0	-615	-35.0	+119	+17.0	-1.0
Category totals and Change totals	1945-55	1,507	15.0	101	1.0	NA	NA	696	6.9	114	1.1	5,711	56.6	1,957	19.4	10,086
	1972-75	2,956	29.2	-26	0.2	NA	NA	64	0.6	262	2.6	4,115	40.7	2,688	26.7	10,111
	Δ	+1,449	+96.0	-75	-74.0			-632	-91.0	+148	+56.0	-1,596	-28.0	+731	+37.0	+0.2

TABLE 17.—Changes in area values of Level I land use and land cover for 2 barrier islands off the Maryland coast

Name of island	Years compared	Urban or built-up land		Agricultural land		Rangeland		Forest land		Water bodies		Wetland		Barren land		Year totals
		Acres	%	Acres	%	Acres	%	Acres	%	Acres	%	Acres	%	Acres	%	
Fenwick Island South	1945-55	820	36.4	NA	NA	NA	NA	-0-	0.0	NA	NA	1,111	49.4	320	14.2	2,251
	1972-75	1,848	57.2	NA	NA	NA	NA	22	0.7	NA	NA	155	4.8	1,205	37.3	3,230
	Δ	+1,028	+125.0					+22	+			-956	-86.0	+885	+276.0	+43.0
Assateague Island North	1945-55	NA	NA	NA	NA	NA	NA	484	5.0	100	1.0	5,302	54.2	3,888	39.8	9,774
	1972-75	NA	NA	NA	NA	NA	NA	629	6.1	160	1.6	5,820	56.8	3,645	35.5	10,254
	Δ							+145	+30.0	+60	+60.0	+518	+10.0	-243	-6.0	+5.0
Category totals and Change totals	1945-55	820	6.8	NA	NA	NA	NA	484	4.0	100	0.9	6,413	53.3	4,208	35.0	12,025
	1972-75	1,848	13.7	NA	NA	NA	NA	651	4.8	160	1.2	5,975	44.3	4,850	36.0	13,484
	Δ	+1,028	+125.0					+167	+35.0	+60	+60.0	-438	-7.0	+642	+15.0	+12.0

TABLE 18.—Changes in area values of Level I land use and land cover for 11 barrier islands off the Virginia coast

Name of island	Years compared	Urban or built-up land		Agricultural land		Rangeland		Forest land		Water bodies		Wetland		Barren land		Year totals
		Acres	%	Acres	%	Acres	%	Acres	%	Acres	%	Acres	%	Acres	%	
Assateague Island South	1945-55	-0	0.0	NA	NA	NA	NA	1,579	20.6	218	2.8	3,487	45.3	2,411	31.3	7,695
	1972-75	67	1.0	NA	NA	NA	NA	1,710	23.7	23	0.3	3,147	43.7	2,250	31.3	7,197
		+67						+131	+8.0	-195	-89.0	-340	-10.0	-161	-7.0	-6.0
Wallops Island	1945-55	-0	0.0	NA	NA	NA	NA	332	4.6	942	13.1	5,329	74.5	559	7.8	7,162
	1972-75	562	9.3	NA	NA	NA	NA	-0	0.0	1,104	18.4	4,129	68.9	206	3.4	6,001
		+562	+					-332	-100.0	+162	+17.0	-1,200	-23.0	-353	-69.0	-16.0
Assawomen Island	1945-55	NA	NA	NA	NA	NA	NA	NA	NA	624	23.2	1,953	72.7	109	4.0	2,686
	1972-75	NA	NA	NA	NA	NA	NA	NA	NA	482	15.0	2,389	74.0	352	11.0	3,223
										-142	-28.0	+436	+22.0	+243	+222.0	+20.0
Metomkin Island	1945-55	NA	NA	NA	NA	NA	NA	NA	NA	247	7.0	2,764	78.5	509	14.5	3,520
	1972-75	NA	NA	NA	NA	NA	NA	NA	NA	284	7.0	2,636	78.1	504	14.9	3,374
										-13	-5.0	-128	-5.0	-5	-1.0	-4.0
Cedar Island	1945-55	NA	NA	NA	NA	NA	NA	NA	NA	39	0.8	4,248	89.4	466	9.8	4,753
	1972-75	NA	NA	NA	NA	NA	NA	NA	NA	37	0.9	3,614	83.7	667	15.4	4,318
										-2	-5.0	-634	-15.0	+201	+43.0	-9.0
Parramore Island	1945-55	NA	NA	NA	NA	NA	NA	1,196	17.4	152	2.2	4,735	69.0	775	11.3	6,858
	1972-75	NA	NA	NA	NA	NA	NA	611	8.2	125	1.6	4,320	58.5	2,347	31.7	7,403
								-585	-49.0	-27	-18.0	-415	-9.0	+1,572	+203.0	+8.0
Hog Island	1945-55	NA	NA	NA	NA	NA	NA	253	5.2	-0	0.0	4,063	83.1	575	11.7	4,891
	1972-75	NA	NA	NA	NA	NA	NA	227	4.1	29	0.5	3,328	60.1	1,958	35.8	5,542
								-26	-10.0	+29	+	-735	-18.0	+1,383	+240.0	+13.0
Cobb Island	1945-55	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	2,341	85.5	396	14.5	2,737
	1972-75	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	2,112	68.9	953	31.1	3,065
												-229	-10.0	+557	+141.0	+12.0
Smith Island	1945-55	-0	0.0	NA	NA	NA	NA	-0	0.0	332	1.9	16,377	90.9	1,302	7.2	18,011
	1972-75	38	0.2	NA	NA	NA	NA	286	1.5	277	1.4	16,361	85.0	2,285	11.9	19,247
		+38	+					+286	+	-55	-17.0	-16	-0.1	+983	+75.0	+7.0
Fishermans Island	1945-55	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	337	36.5	587	63.5	924
	1972-75	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	638	42.8	851	57.2	1,489
												+301	+89.0	+264	+45.0	+61.0
Bodie Island North	1945-55	-0	0.0	-0	0.0	NA	NA	-0	0.0	-0	0.0	6,069	78.0	1,709	22.0	7,778
	1972-75	477	5.9	51	0.6	NA	NA	1,653	20.5	16	0.2	3,730	46.3	2,132	26.5	8,059
		+477	+	+51	+	NA	NA	+1,653	+	+16	+	-2,339	-39.0	+423	+25.0	+4.0
Category totals and Change totals	1945-55	-0	0.0	-0	0.0	NA	NA	3,360	5.4	2,554	3.8	51,703	76.8	9,398	14.0	67,015
	1972-75	1,144	1.6	51	0.1	NA	NA	4,487	6.5	2,327	3.3	46,404	67.5	14,505	21.0	68,918
		+1,144	+	+51	+	NA	NA	1,127	+33.5	-227	-9.0	-5,299	-10.0	+5,107	+54.0	+3.0

TABLE 19.—Changes in area values of Level I land use and land cover for 23 barrier islands off the North Carolina coast

Name of island	Years compared		Urban or built-up land		Agricultural land		Rangeland		Forest land		Water bodies		Wetland		Barren land		Year totals
	1945-55	1972-75	Acres	%	Acres	%	Acres	%	Acres	%	Acres	%	Acres	%	Acres	%	
Bodie Island South	1945-55		2,227	5.4	NA	NA	NA	NA	2,887	7.0	821	2.0	22,047	53.3	13,362	32.3	41,344
	1972-75	Δ	7,074	15.6	NA	NA	NA	NA	3,185	6.9	897	1.9	20,054	44.1	14,329	31.5	45,539
			+4,847	+218.0					+298	+10.0	+6	+9.0	-1,993	-9.0	+965	+7.0	+10.0
Hatteras Island	1945-55		809	3.6	NA	NA	NA	NA	-0-	0.0	568	2.5	13,706	60.5	7,556	33.4	22,639
	1972-75	Δ	2,224	9.7	NA	NA	NA	NA	162	0.7	-0-	0.0	12,477	54.9	7,875	34.7	22,738
			+1,415	+175.0					+162	+	-568	-100.0	-1,229	-9.0	+319	+4.0	+0.4
Ocracoke Island	1945-55		208	3.4	NA	NA	NA	NA	-0-	0.0	NA	NA	3,734	60.9	2,191	35.7	6,133
	1972-75	Δ	433	7.0	NA	NA	NA	NA	39	0.6	NA	NA	3,456	56.7	2,178	35.7	6,106
			+225	+108.0					+39	+			-278	-7.0	-13	-1.0	-0.4
Portsmouth Island	1945-55		113	4.9	NA	NA	NA	NA	NA	NA	NA	NA	1,351	58.6	841	36.5	2,305
	1972-75	Δ	193	8.1	NA	NA	NA	NA	NA	NA	NA	NA	765	32.2	1,417	59.7	2,375
			+80	+71.0					-0-				-586	-43.0	+576	+68.0	+3.0
Core Banks North	1945-55		NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	1,423	60.6	927	39.4	2,350
	1972-75	Δ	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	1,333	49.3	1,372	50.7	2,705
													-90	-6.0	+445	+43.0	+15.0
Core Banks South	1945-55		NA	NA	NA	NA	NA	NA	NA	NA	0.0	0.0	4,312	55.9	3,396	44.1	7,708
	1972-75	Δ	NA	NA	NA	NA	NA	NA	NA	NA	31	0.4	4,307	55.7	3,404	43.9	7,742
													-5	-0.1	+8	+0.2	+0.4
Shackleford Banks	1945-55		NA	NA	NA	NA	NA	NA	233	8.5	NA	NA	817	29.9	1,683	61.6	2,733
	1972-75	Δ	NA	NA	NA	NA	NA	NA	233	8.1	NA	NA	854	29.7	1,783	62.2	2,870
								-0-	0.0				+37	+5.0	+100	+6.0	+5.0
Bogue Banks	1945-55		378	4.4	NA	NA	NA	NA	4,060	47.4	-0-	0.0	2,157	25.2	1,964	23.0	8,559
	1972-75	Δ	3,646	41.7	NA	NA	NA	NA	1,964	22.5	14	0.1	993	11.3	2,132	24.4	8,749
			+3,268	+865.0					-2,096	-51.0	+14	+	1,164	-54.0	+68	+9.0	+2.0
Hammock Island	1945-55		NA	NA	NA	NA	NA	NA	184	3.7	NA	NA	4,032	81.3	744	15.0	4,960
	1972-75	Δ	NA	NA	NA	NA	NA	NA	145	2.8	NA	NA	4,171	80.2	882	17.0	5,198
													+139	+3.0	+138	+16.0	+5.0
Onslow Beach	1945-55		45	1.2	NA	NA	NA	NA	NA	NA	NA	NA	2,996	80.6	677	18.2	3,718
	1972-75	Δ	61	1.7	NA	NA	NA	NA	NA	NA	NA	NA	2,399	66.5	1,145	31.8	3,605
			+16	+36.0									-597	-20.0	+469	+69.0	-3.0
Ashe Island	1945-55		291	3.0	NA	NA	NA	NA	622	6.4	NA	NA	7,228	74.3	1,590	16.3	9,731
	1972-75	Δ	2,091	22.3	NA	NA	NA	NA	156	1.6	NA	NA	6,761	72.1	377	4.0	9,385
			+1,800	+619.0					-66	-75.0			+467	-6.0	-1,213	-76.0	-4.0
Lee Island	1945-55		NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	1,379	92.3	115	7.7	1,494
	1972-75	Δ	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	1,321	87.8	185	12.2	1,506
													-58	-4.0	+70	+61.0	+1.0
Rich Inlet	1945-55		NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	1,405	84.2	263	15.8	1,668
	1972-75	Δ	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	1,462	94.0	94	6.0	1,556
													+57	+4.0			-7.0
Figure Eight Island	1945-55		46	1.1	NA	NA	NA	NA	NA	NA	NA	NA	3,490	85.5	548	13.4	4,084
	1972-75	Δ	404	10.4	NA	NA	NA	NA	NA	NA	NA	NA	2,840	73.5	620	16.1	3,864
			+358	+778.0									-650	-72	+72	-13.0	-5.0
Wrightsville Beach	1945-55		311	20.4	NA	NA	NA	NA	NA	NA	NA	NA	1,057	69.5	154	10.1	1,322
	1972-75	Δ	577	37.7	NA	NA	NA	NA	NA	NA	NA	NA	733	47.9	221	14.4	1,531
			+266	+86.0									-324	-31.0	+67	+44.0	+1.0
Masonboro Island	1945-55		NA	NA	NA	NA	NA	NA	-0-	0.0	NA	NA	3,114	80.3	764	19.7	3,878
	1972-75	Δ	NA	NA	NA	NA	NA	NA	119	3.2	NA	NA	2,977	81.3	579	15.7	3,675
									+119	+			-137	-4.0	-185	-24.0	-5.0

TABLE 19.—Changes in area values of Level I land use and land cover for 23 barrier islands off the North Carolina coast.—Continued

Name of island	Years compared	Urban or built-up land		Agricultural land		Rangeland		Forest land		Water bodies		Wetland		Barren land		Year totals
		Acres	%	Acres	%	Acres	%	Acres	%	Acres	%	Acres	%	Acres	%	
Carolina Beach Island	1945-55	817	13.9	NA	NA	NA	28.8	1,697	28.8	NA	NA	2,529	42.9	852	14.4	5,895
	1972-75	1,791	29.1	NA	NA	NA	32.2	1,985	32.2	NA	NA	789	12.7	1,607	26.0	6,172
	Δ	+974	+119.0				+17.0	-288	+17.0			-1,740	-69.0	+755	+39.0	+5.0
Smith Island (Cape Fear)	1945-55	-0-	0.0	NA	NA	NA	16.3	1,005	16.3	NA	NA	4,090	66.3	1,077	17.4	6,172
	1972-75	474	1.4	NA	NA	NA	17.6	1,114	17.6	NA	NA	4,314	68.3	429	6.7	6,331
	Δ	+474	+				+1.0	+109	+1.0			+224	+5.0	-648	-60.0	+3.0
Oak Island	1945-55	460	6.1	NA	NA	NA	44.9	3,412	44.9	29	0.4	3,200	42.2	485	65.6	7,586
	1972-75	1,146	16.9	NA	NA	NA	37.0	2,507	37.0	77	1.1	2,874	42.4	179	2.6	6,783
	Δ	+686	+149.0				-27.0	-905	-27.0	+48	+165.0	-326	-11.0	-306	-63.0	-11.0
Holden Beach Island	1945-55	157	7.5	NA	NA	NA	2.3	48	2.3	NA	NA	1,340	64.2	541	26.0	2,086
	1972-75	749	38.9	NA	NA	NA	8.3	160	8.3	NA	NA	781	40.6	237	12.2	1,927
	Δ	+592	+377.0				+233.0	+112	+233.0			-559	-42.0	-304	-56.0	-7.0
Hales Beach Island	1945-55	-0-	0.0	NA	NA	NA	NA	NA	NA	-0-	0.0	2,008	81.0	471	19.0	2,479
	1972-75	544	23.6	NA	NA	NA	NA	NA	NA	205	8.8	1,248	54.1	314	13.5	2,311
	Δ	+544	+							+205	+	-60	-33.0	-157	-33.0	-7.0
Sunset Beach Island	1945-55	-0-	0.0	NA	NA	NA	NA	NA	NA	NA	NA	1,398	74.4	482	25.6	1,880
	1972-75	218	11.2	NA	NA	NA	NA	NA	NA	NA	NA	1,216	62.8	506	26.0	1,940
	Δ	+218	+									-182	-13.0	+24	+5.0	+3.0
Bird Island	1945-55	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	112	41.3	159	58.7	271
	1972-75	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	77	28.5	192	71.5	269
	Δ											-35	-31.0	+33	+21.0	-1.0
Category totals and	1945-55	5,862	3.9	NA	NA	NA	9.4	14,148	9.4	1,418	0.9	88,925	58.6	40,842	26.9	151,195
	1972-75	21,625	13.9	NA	NA	NA	7.9	11,769	7.9	1,224	0.8	78,202	50.3	42,057	27.1	154,877
Change totals	Δ	+15,763	+269.0				-16.0	-2,379	-16.0	-194	-14.0	-10,723	-12.0	+1,215	+3.0	+2.0

ON ATLANTIC AND GULF COAST BARRIER ISLANDS FOR 1942-55 AND 1972-75

TABLE 20.—Changes in area values of Level I land use and land cover for 34 barrier islands off the South Carolina coast

Name of island	Years compared	Urban or built-up land		Agricultural land		Rangeland	Forest land	Water bodies		Wetland		Barren land		Year totals
		Acres	%	Acres	%			Acres	%	Acres	%	Acres	%	
Waives Island	1945-55	-0-	0.0	NA	NA	NA	262	13.6	NA	967	50.1	701	36.3	1,930
	1972-75	339	24.4	NA	NA	NA	269	19.2	NA	749	53.7	38	2.7	1,895
Murrells Inlet	1945-55	98	3.1	NA	NA	NA	NA	NA	529	2,098	66.9	409	13.1	3,134
	1972-75	870	28.4	NA	NA	NA	NA	NA	506	1,558	51.1	128	4.1	3,072
Pawleys Island	1945-55	201	14.2	NA	NA	NA	NA	NA	NA	861	61.0	350	24.8	1,412
	1972-75	595	37.5	NA	NA	NA	NA	NA	973	61.3	19	1.2	1,587	
Dehdue Beach	1945-55	-0-	0.0	NA	NA	NA	326	18.4	16	1,144	64.6	286	16.1	1,772
	1972-75	77	4.9	NA	NA	NA	602	38.4	-0-	838	53.5	51	3.2	1,568
North Island	1945-55	NA	NA	NA	NA	NA	NA	NA	87	5,818	88.2	631	10.5	6,596
	1972-75	NA	NA	NA	NA	NA	NA	NA	77	6,362	96.3	173	2.6	6,612
South Island	1945-55	NA	NA	NA	NA	NA	490	11.0	560	2,976	67.0	414	9.4	4,440
	1972-75	NA	NA	NA	NA	NA	454	9.4	576	3,136	65.6	621	13.0	4,787
Cedar Island	1945-55	NA	NA	NA	NA	NA	NA	NA	16	4,039	98.1	78	1.9	4,117
	1972-75	NA	NA	NA	NA	NA	NA	NA	NA	4,205	97.9	90	2.1	4,295
Murphy Island	1945-55	NA	NA	NA	NA	NA	307	3.8	77	7,532	92.7	211	2.6	8,127
	1972-75	NA	NA	NA	NA	NA	557	6.5	51	7,616	88.5	384	4.5	8,608
Cape Island	1945-55	NA	NA	NA	NA	NA	38	2.6	NA	742	51.3	659	45.8	1,439
	1972-75	NA	NA	NA	NA	NA	45	2.8	NA	877	55.5	417	30.0	1,581
Raccoon Key	1945-55	NA	NA	NA	NA	NA	NA	NA	NA	5,004	97.7	115	2.3	5,119
	1972-75	NA	NA	NA	NA	NA	102	2.0	NA	4,787	96.3	83	1.7	4,972
Bull Island	1945-55	NA	NA	NA	NA	NA	1,363	26.1	70	3,686	70.4	115	2.2	5,234
	1972-75	NA	NA	NA	NA	NA	2,368	44.6	45	2,758	52.2	122	2.3	5,293
Capers Island	1945-55	NA	NA	NA	NA	NA	966	26.2	NA	2,486	67.4	237	6.4	3,689
	1972-75	NA	NA	NA	NA	NA	1,050	29.4	NA	2,467	69.1	53	1.5	3,570
Dewees Island	1945-55	NA	NA	NA	NA	NA	256	13.9	-0-	1,342	72.9	243	13.2	1,841
	1972-75	NA	NA	NA	NA	NA	580	33.9	34	908	53.0	191	11.1	1,713
Isle of Palms	1945-55	333	9.6	NA	NA	NA	1,024	29.5	NA	1,484	42.7	633	18.2	3,474
	1972-75	979	30.1	NA	NA	NA	909	27.8	NA	1,030	41.8	339	10.4	3,257
Sullivans Island	1945-55	672	43.8	NA	NA	NA	NA	NA	-0-	735	47.9	128	8.3	1,535
	1972-75	890	53.3	NA	NA	NA	NA	NA	83	698	41.8	-0-	0.0	1,671
Morris Island	1945-55	NA	NA	NA	NA	NA	NA	NA	NA	2,674	100.0	-0-	0.0	2,674
	1972-75	NA	NA	NA	NA	NA	NA	NA	NA	2,880	98.3	51	1.7	2,931
Folly Island	1945-55	219	10.9	NA	NA	NA	NA	NA	NA	1,440	71.6	352	17.5	2,011
	1972-75	704	32.1	NA	NA	NA	NA	NA	NA	986	44.9	506	23.0	2,196
		+485	+221.0				-454	-31.0	+154	+44.0				+9.0

## APPENDIX I: TABLES OF AREA VALUES OF LAND USE AND LAND COVER

TABLE 20.—Changes in area values of Level I land use and land cover for 34 barrier islands off the South Carolina coast—Continued

Name of island	Years compared		Urban or built-up land Acres	Agricultural land Acres	Rangeland Acres	Forest land Acres	Water bodies		Wetland Acres	Barren land Acres	Year totals
	1945-55	1972-75					Acres	%			
Kiawah Island	1945-55	1972-75	-0-	NA	NA	NA	32	0.4	7,258	99.6	7,290
	Δ	Δ	+13	NA	NA	NA	70	1.0	7,142	97.4	7,334
Seabrook Island	1945-55	1972-75	12	800	NA	NA	NA	NA	4,448	79.0	5,631
	Δ	Δ	+327	+384	NA	NA	NA	NA	-627	-14.0	5,542
Devaux Banks	1945-55	1972-75	NA	NA	NA	NA	NA	NA	NA	NA	180
	Δ	Δ	NA	NA	NA	NA	NA	NA	NA	NA	269
Botany Bay Island	1945-55	1972-75	NA	NA	NA	NA	NA	537	98.4	38	575
	Δ	Δ	NA	NA	NA	NA	NA	458	79.6	117	575
Edisto Island	1945-55	1972-75	-0-	2,470	NA	3,328	-0-	10,745	63.2	460	17,003
	Δ	Δ	+723	+487	NA	4,698	45	7,539	46.5	256	16,218
Pine Island	1945-55	1972-75	NA	NA	NA	NA	NA	-3,206	-30.0	-204	1,925
	Δ	Δ	NA	NA	NA	NA	NA	2,060	96.9	65	2,125
Otter Island	1945-55	1972-75	NA	398	NA	-0-	NA	3,100	88.6	-0-	3,498
	Δ	Δ	NA	-398	NA	58	NA	3,462	96.5	70	3,590
Hunting Island	1945-55	1972-75	NA	NA	NA	NA	-0-	6,188	97.7	143	6,331
	Δ	Δ	NA	NA	NA	NA	224	5,894	91.2	346	6,464
Frip Island	1945-55	1972-75	-0-	NA	NA	104	NA	4,054	94.1	150	4,308
	Δ	Δ	+614	NA	NA	-0-	NA	3,584	82.9	121	4,319
Pritchards Island	1945-55	1972-75	NA	NA	NA	NA	NA	-470	-12.0	-21	1,925
	Δ	Δ	NA	NA	NA	NA	NA	2,559	97.3	59	2,618
Little Capers Island	1945-55	1972-75	NA	NA	NA	NA	NA	2,477	95.8	109	2,586
	Δ	Δ	NA	NA	NA	NA	NA	-82	-3.0	+50	2,102
St. Phillips Island	1945-55	1972-75	NA	NA	NA	NA	NA	2,043	97.2	59	2,102
	Δ	Δ	NA	NA	NA	NA	NA	1,754	82.8	365	2,119
Bay Point Island	1945-55	1972-75	NA	NA	NA	NA	NA	-289	-14.0	+306	6,731
	Δ	Δ	NA	NA	NA	NA	NA	4,981	100.0	-0-	4,973
Hilton Head Island	1945-55	1972-75	119	5,375	NA	18,491	360	7,895	28.6	357	27,597
	Δ	Δ	+6,819	+4,364	NA	-5,251	+107	8,227	30.2	2,400	27,283
Daufuskie Island	1945-55	1972-75	NA	723	NA	4,108	NA	1,900	28.2	NA	6,720
	Δ	Δ	NA	-723	NA	5,062	NA	1,658	24.6	NA	6,720
Turtle Island	1945-55	1972-75	NA	NA	NA	70	NA	1,555	95.7	NA	1,625
	Δ	Δ	NA	NA	NA	-0-	NA	1,562	100.0	NA	1,562
Jones Island	1945-55	1972-75	NA	NA	NA	NA	NA	+7	+0.4	NA	2,687
	Δ	Δ	NA	NA	NA	NA	NA	2,451	91.2	236	2,598
Category totals and Change totals	1945-55	1972-75	1,654	9,766	NA	26,133	1,731	107,802	69.6	7,792	154,878
	Δ	Δ	+11,427	-4,614	NA	-1,139	+447	100,949	65.3	8,234	154,588

ON ATLANTIC AND GULF COAST BARRIER ISLANDS FOR 1942-55 AND 1972-75

TABLE 21.—Changes in area values of Level I land use and land cover for 15 barrier islands off the Georgia coast

Name of island	Years compared	Urban or built-up land		Agricultural land		Rangeland		Forest land		Water bodies		Wetland		Barren land		Year totals
		Acres	%	Acres	%	Acres	%	Acres	%	Acres	%	Acres	%	Acres	%	
Tybee Island	1945-55	755	18.3	NA	NA	NA	NA	NA	NA	0.0	0.0	3,365	81.7	NA	NA	4,120
	1972-75	806	19.6	NA	NA	NA	NA	NA	NA	1.2	1.2	3,264	79.2	NA	NA	4,121
	Δ	+51	+7.0							+	+	-101	-3.0			+0.02
Little Tybee Island	1945-55	NA	NA	NA	NA	NA	NA	549	8.0	292	4.2	5,810	84.6	221	3.2	6,872
	1972-75	NA	NA	NA	NA	NA	NA	666	9.7	288	4.2	5,523	80.3	397	5.8	6,874
	Δ							+117	+21.0	-4	-1.0	+287	-5.0	+176	+80.0	+0.03
Williamson Island	1945-55	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	97	33.0	197	67.0	294
	1972-75	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	115	39.1	179	60.9	294
	Δ											+18	+19.0	-18	-9.0	0.0
Wassaw Island	1945-55	NA	NA	NA	NA	382	3.6	2,091	19.7	16	0.2	7,837	74.0	272	2.5	10,598
	1972-75	NA	NA	NA	NA	0	0.0	1,843	17.3	0	0.0	8,384	78.8	410	3.9	10,637
	Δ					-382	-100.0	-248	-12.0	-16	-100.0	+574	+6.0	+138	+51.0	+0.4
Ossabaw Island	1945-55	26	0.1	55	0.2	NA	NA	7,646	30.2	NA	NA	16,963	67.0	618	2.5	25,308
	1972-75	26	0.1	51	0.2	NA	NA	7,770	30.7	NA	NA	16,435	65.0	1,024	4.0	25,306
	Δ	0	0.0	-4	-7.0			+124	+2.0			-528	-3.0	+406	+66.0	-0.01
St. Catherines Island	1945-55	NA	NA	107	0.7	338	2.2	5,690	36.7	374	2.4	8,615	55.6	368	2.4	15,492
	1972-75	NA	NA	179	1.2	275	1.8	6,003	38.7	384	2.5	8,243	53.2	410	2.6	15,494
	Δ			+72	+67.0	-63	-19.0	+313	+6.0	+10	+3.0	-372	-4.0	+42	+11.0	+0.01
Blackbeard Island	1945-55	NA	NA	NA	NA	534	10.4	2,056	40.1	127	2.5	2,004	39.1	409	7.9	5,130
	1972-75	NA	NA	NA	NA	0	0.0	2,323	45.3	179	3.5	2,054	40.1	576	11.2	5,132
	Δ					-534	-100.0	+267	+13.1	+52	+41.0	+50	+3.0	-167	+41.0	+0.03
Sapelo Island	1945-55	388	1.9	489	2.4	1,871	9.3	4,633	23.1	96	0.6	11,717	58.4	862	4.3	20,056
	1972-75	282	1.4	653	3.3	3,117	15.5	4,032	20.1	557	2.8	10,746	53.6	672	3.3	20,059
	Δ	-106	-27.0	+164	+33.0	+1,246	+67.0	-601	-13.0	+461	+480.0	-971	-8.0	-190	-22.0	+0.01
Wolf Island	1945-55	NA	NA	NA	NA	NA	NA	NA	NA	795	10.8	6,533	89.2	NA	NA	7,328
	1972-75	NA	NA	NA	NA	NA	NA	NA	NA	787	10.7	6,541	89.3	NA	NA	7,328
	Δ									-8	-1.0	+8	+0.1			0.0
Little St. Simons	1945-55	NA	NA	NA	NA	307	2.8	1,091	9.9	114	1.0	8,801	79.7	730	6.6	11,043
	1972-75	NA	NA	NA	NA	0	0.0	1,120	10.1	166	1.5	8,640	78.2	1,120	10.2	11,046
	Δ					+307	+100.0	+29	+3.0	+52	+46.0	-161	-2.0	+390	+53.0	+0.03
Sea Island	1945-55	470	15.8	NA	NA	NA	NA	468	15.7	NA	NA	1,744	58.5	299	10.0	2,981
	1972-75	704	23.6	NA	NA	NA	NA	378	12.7	NA	NA	1,792	60.1	109	3.6	2,983
	Δ	+234	+50.0					-90	-19.0			+48	+3.0	-190	-63.0	+0.07
Saint Simons Island	1945-55	3022	10.4	103	0.3	NA	NA	6,906	23.7	1,440	5.0	17,640	60.6	0	0.0	29,111
	1972-75	4,800	16.4	269	0.0	NA	NA	5,120	17.5	1,440	4.0	17,414	59.7	173	0.6	29,216
	Δ	+1,778	+58.0	+166	+161.0			-1,786	-26.0	0	0.0	-226	-1.0	+173	+0.4	+0.4
Jekyll Island	1945-55	445	7.7	NA	NA	NA	NA	1,380	23.9	0	0.0	3,742	64.8	207	3.6	5,774
	1972-75	1,696	29.4	NA	NA	NA	NA	1,370	23.7	51	0.9	2,054	35.6	602	10.4	5,773
	Δ	+1,251	+281.0					-10	-1.0	+51	+0.9	-1,688	-45.0	+395	+191.0	-0.02
Little Cumberland Island	1945-55	NA	NA	NA	NA	23	1.0	1,166	48.5	NA	NA	918	38.2	296	12.3	2,403
	1972-75	NA	NA	NA	NA	0	0.0	1,075	44.7	NA	NA	1,069	44.4	262	10.9	2,406
	Δ					-23	-100.0	-91	-8.0			+151	+16.0	-34	-11.0	+0.1
Cumberland Island	1945-55	55	0.2	362	1.5	1,269	5.1	9,901	39.7	43	0.2	11,000	44.1	2,295	9.2	24,925
	1972-75	122	0.5	307	1.2	538	2.2	10,675	42.8	0	0.0	11,277	45.2	2,010	8.1	24,929
	Δ	+67	+123.0	-55	-15.0	-731	-58.0	+774	+8.0	-43	-100.0	+277	+2.0	-285	-12.0	+0.02
Category totals and Change totals		5161	3.0	1,116	0.7	4,724	2.8	43,577	25.4	3,297	1.9	106,786	62.3	6,774	3.9	171,435
		8,486	4.9	1,459	0.9	3,930	2.3	42,375	24.7	3,903	2.3	103,551	60.3	7,944	4.6	171,598
		+3,275	+63.0	+343	+31.0	-794	-17.0	-1,202	-3.0	+606	+18.0	-3,235	-3.0	-1,170	+17.0	+0.09

APPENDIX I: TABLES OF AREA VALUES OF LAND USE AND LAND COVER

TABLE 22.—Changes in area values of Level I land use and land cover for 80 barrier islands off the Florida coast

Name of island	Years compared	Urban or built-up land		Agricultural land		Rangeland		Forest land		Water bodies		Wetland		Barren land		Year totals
		Acres	%	Acres	%	Acres	%	Acres	%	Acres	%	Acres	%	Acres	%	
Amelia Island	1945-55	2,359	14.5	216	1.3	NA	NA	5,392	32.9	NA	NA	6,815	41.6	1,580	9.7	16,372
	1972-75	5,630	34.9	-0-	0.0	NA	NA	6,474	40.1	NA	NA	3,225	20.0	821	5.0	16,150
	Δ	+3,261	+138.0	-216	-100.0			+1,082	+20.0			-3,590	-53.0	-759	-48.0	-1.0
Bird Island	1945-55	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	83	110.0	83
	1972-75	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	65	100.0	65
	Δ													-18	-28.0	-28.0
Talbot Island	1945-55	-0-	0.0	NA	NA	NA	NA	1,075	45.6	NA	NA	622	26.4	659	28.0	2,356
	1972-75	102	5.3	NA	NA	NA	NA	1,270	64.2	NA	NA	183	9.2	421	21.3	1,976
	Δ	+102	+					+195	+18.0			-439	-71.0	-238	-36.0	-16.0
Guana	1945-55	186	3.4	NA	NA	NA	NA	1,380	34.6	NA	NA	1,333	33.4	1,140	28.6	3,989
	1972-75	379	9.6	NA	NA	NA	NA	1,511	38.2	NA	NA	1,649	41.6	424	10.6	3,963
	Δ	+243	+179.0					+131	+9.0			+316	+24.0	-716	-63.0	-1.0
Anastasia	1945-55	786	8.2	NA	NA	NA	NA	-0-	0.0	NA	NA	6,259	65.4	2,528	26.4	9,573
	1972-75	1,770	17.3	NA	NA	NA	NA	1,681	16.5	NA	NA	4,667	45.7	2,101	20.5	10,219
	Δ	+984	+125.0					+1,681	+			-1,592	-25.0	-427	-17.0	+7.0
Matanzas	1945-55	96	2.3	104	2.5	NA	NA	1,169	27.8	NA	NA	2,256	53.6	582	13.8	4,207
	1972-75	246	5.8	89	2.1	NA	NA	3,035	72.6	NA	NA	249	5.9	571	13.6	4,190
	Δ	+150	+156.0	-15	-14.0			+1,866	+160.0			-2,007	-89.0	-11	-2.0	-0.4
Flagler	1945-55	3,284	27.7	NA	NA	NA	NA	3,515	29.3	-0-	0.0	1,344	11.2	3,858	32.1	12,001
	1972-75	8,806	72.9	NA	NA	NA	NA	1,217	10.1	59	0.4	941	7.7	1,075	8.9	12,098
	Δ	+5,522	+168.0					-2,298	-65.0	+59	+	-403	-30.0	-2,783	-72.0	+1.0
Mosquito	1945-55	388	2.5	NA	NA	NA	NA	1,119	7.1	-0-	0.0	11,649	74.4	2,512	16.0	15,668
	1972-75	2,107	13.8	NA	NA	NA	NA	940	6.1	21	0.1	9,502	62.5	2,684	17.5	15,254
	Δ	+1,719	+456					-179	-16.0	+21	+	-2,147	-18.0	+172	+7.0	-3.0
Cape Canaveral	1945-55	605	3.3	NA	NA	-0-	0.0	13,874	74.5	115	0.6	3,117	16.7	908	4.9	18,619
	1972-75	14,905	76.9	NA	NA	214	1.1	1,681	8.6	614	3.1	1,378	7.1	627	3.2	19,419
	Δ	+14,300	+2,364.0			+214	+	-12,193	-88.0	-449	+439.0	-1,739	-57.0	-281	-31.0	+4.0
Cocoa Beach Island	1945-55	2,687	13.3	537	2.7	NA	NA	11,169	55.4	-0-	0.0	5,075	25.2	677	3.4	20,145
	1972-75	13,597	63.2	227	1.1	NA	NA	3,699	17.2	87	0.4	3,022	14.0	891	4.1	21,523
	Δ	+10,910	+406.0	-310	-58.0			-7,470	-67.0	+87	+	-2,053	-40.0	+214	+32.0	+7.0
Vero Beach Island	1945-55	358	2.5	2,093	14.6	NA	NA	4,716	32.8	420	2.9	6,127	42.9	618	4.3	14,332
	1972-75	3,183	21.6	1,965	13.3	NA	NA	3,091	20.4	239	1.6	6,373	43.1	-0-	0.0	14,781
	Δ	+2,825	+789.0	-128	-6.0			-1,695	-36.0	-181	-43.0	+246	+3.0	-618	-100.0	+3.0
Hutchinson Island	1945-55	142	1.9	107	1.5	NA	NA	250	3.4	99	1.3	5,220	71.3	1,506	20.6	7,324
	1972-75	985	13.2	-0-	0.0	NA	NA	217	2.9	-0-	0.0	5,217	70.4	1,003	13.5	7,422
	Δ	+843	+594.0	-107	-100.0			-33	-13.0	-99	-100.0	-3	-0.1	-503	-33.0	+1.0
Jupiter Island	1945-55	778	22.6	NA	NA	NA	NA	438	12.7	NA	NA	2,090	60.6	143	4.1	3,449
	1972-75	904	25.9	NA	NA	NA	NA	322	9.2	NA	NA	2,258	64.9	-0-	0.0	3,484
	Δ	+126	+16.0					-116	-27.0			+168	+8.0	-143	-100.0	+1.0
Lake Worth	1945-55	296	37.9	NA	NA	NA	NA	98	12.5	NA	NA	274	35.1	113	14.5	781
	1972-75	627	77.8	NA	NA	NA	NA	-0-	0.0	NA	NA	179	22.2	-0-	0.0	806
	Δ	+331	+112.0					-98	-100.0			-95	-35.0	-113	-100.0	+3.0
Palm Beach	1945-55	2,368	74.8	NA	NA	NA	NA	312	9.9	NA	NA	142	4.5	342	10.8	3,164
	1972-75	3,104	91.4	NA	NA	NA	NA	240	7.0	NA	NA	35	1.0	22	0.6	3,401
	Δ	+736	+31.0					-72	-23.0			-107	-75.0	-820	-94.0	+7.0
Boca Raton	1945-55	1,522	56.7	NA	NA	NA	NA	NA	NA	NA	NA	849	31.7	312	11.6	2,683
	1972-75	2,371	88.0	NA	NA	NA	NA	NA	NA	NA	NA	326	12.0	-0-	0.0	2,687
	Δ	+849	+56.0									-523	-62.0	-312	-100.0	+0.5

TABLE 22.—Changes in area values of Level I land use and land cover for 80 barrier islands off the Florida coast—Continued

Name of island	Years compared		Urban or built-up land Acres	Agricultural land Acres	Rangeland Acres	Forest land Acres	Water bodies		Wetland		Barren land		Year totals
	1945-55	1972-75					Acres	%	Acres	%	Acres	%	
Hillsboro Beach	1945-55	55.3	485	NA	NA	NA	NA	NA	NA	NA	392	44.7	877
	1972-75	100.0	869	NA	NA	NA	NA	NA	NA	NA	-0-	0.0	869
Fort Lauderdale	1945-55	24.4	269	NA	NA	NA	NA	NA	0.0	0.0	832	75.6	1,101
	1972-75	94.1	1,024	NA	NA	NA	NA	65	5.9	0.0	-0-	0.0	1,089
Miami Beach	1945-55	87.7	5,623	NA	NA	NA	115	1.8	NA	NA	672	10.5	6,410
	1972-75	98.0	7,170	NA	NA	NA	151	2.0	NA	NA	-0-	0.0	7,321
Fisher Island	1945-55	27.0	1,547	NA	NA	NA	+36	+81.0	NA	NA	-672	-100.0	+14.0
	1972-75	20.9	44	NA	NA	0.0	NA	NA	79.1	NA	NA	NA	211
Virginia Key	1945-55	5.5	47	NA	NA	564	NA	NA	63	7.3	188	21.8	862
	1972-75	90.9	588	NA	NA	528	NA	NA	-0-	0.0	40	3.4	1,156
Key Biscayne	1945-55	14.3	363	NA	NA	-0-	NA	NA	686	27.1	1,485	58.6	2,534
	1972-75	54.9	1,279	NA	NA	572	NA	NA	485	20.7	-0-	0.0	2,336
Cape Sable	1945-55	252.0	+916	NA	NA	+572	NA	NA	-201	-29.0	-1,485	-100.0	-8.0
	1972-75	NA	NA	NA	NA	NA	NA	0.0	4,050	100.0	NA	NA	4,050
Mud Bay	1945-55	NA	NA	NA	NA	173	NA	NA	3,931	95.8	NA	NA	4,104
	1972-75	NA	NA	NA	NA	+173	NA	NA	-119	-3.0	NA	NA	+1.0
Shark Point	1945-55	NA	NA	NA	NA	NA	NA	NA	8,095	100.0	NA	NA	8,095
	1972-75	NA	NA	NA	NA	NA	NA	NA	8,028	100.0	NA	NA	8,028
McLaughlin	1945-55	NA	NA	NA	NA	5,249	NA	NA	54,318	91.2	NA	NA	59,567
	1972-75	NA	NA	NA	NA	5,171	NA	NA	52,780	91.9	NA	NA	57,951
Alligator Cove	1945-55	NA	NA	NA	NA	-78	NA	NA	-1,538	-3.0	NA	NA	-3.0
	1972-75	NA	NA	NA	NA	NA	NA	NA	16,141	90.9	NA	NA	17,764
Duck Rock	1945-55	NA	NA	NA	NA	1,623	NA	NA	17,810	92.3	NA	NA	19,398
	1972-75	NA	NA	NA	NA	1,498	NA	NA	+1,669	+10.0	NA	NA	+9.0
Ten Thousand Islands	1945-55	NA	NA	NA	NA	5,930	NA	NA	13,871	70.1	NA	NA	19,801
	1972-75	NA	NA	NA	NA	5,788	NA	NA	12,022	67.6	NA	NA	17,810
Cape Romano	1945-55	NA	NA	NA	NA	-142	NA	NA	-1,849	-13.0	NA	NA	-10.0
	1972-75	NA	NA	NA	NA	12,719	NA	NA	21,620	63.0	NA	NA	34,339
Rice Island	1945-55	NA	NA	NA	NA	11,421	NA	NA	19,730	63.6	NA	NA	31,151
	1972-75	NA	NA	NA	NA	-1,298	NA	NA	-1,890	-9.0	NA	NA	-9.0
Marco Island	1945-55	NA	NA	NA	NA	34,981	NA	NA	19,343	35.4	NA	NA	54,638
	1972-75	NA	NA	NA	NA	32,881	NA	NA	22,919	40.7	NA	NA	56,289
Little Marco Group	1945-55	NA	NA	NA	NA	-2,100	NA	NA	+3,576	+18.0	NA	NA	+3.0
	1972-75	NA	NA	NA	NA	0.0	NA	NA	1,433	100.0	NA	NA	1,433
Marco Island	1945-55	NA	NA	NA	NA	198	NA	NA	1,264	86.5	NA	NA	1,462
	1972-75	NA	NA	NA	NA	+198	NA	NA	-169	-12.0	NA	NA	+2.0
Little Marco Group	1945-55	0.0	0.0	0.0	1,140	0.0	NA	NA	1,167	100.0	NA	NA	1,167
	1972-75	32.1	1,640	NA	119	2.3	NA	NA	1,191	100.0	NA	NA	1,191
Little Marco Group	1945-55	0.0	0.0	0.0	2,025	76.3	0.0	0.0	4,325	79.1	-0-	0.0	5,465
	1972-75	0.6	20	NA	643	21.6	2.8	2.8	2,141	72.0	2,392	47.1	5,097
Little Marco Group	1945-55	0.0	0.0	0.0	-1,021	-90.0	+245	+245	-3,785	-87.0	+2,392	+7.0	2,654
	1972-75	0.6	20	NA	73	2.4	86	86	2,116	+6.0	-609	-97.0	2,983
Little Marco Group	1945-55	+20	+20	+73	+643	+21.6	+86	+86	+116	+6.0	-609	-97.0	+12.0
	1972-75	0.6	20	NA	73	2.4	86	86	2,116	+6.0	-609	-97.0	2,983

TABLE 22.—Changes in area values of Level I land use and land cover for 80 barrier islands off the Florida coast—Continued

Name of island	Years compared		Urban or built-up land Acres	Agricultural land Acres	Rangeland Acres	Forest land Acres	Water bodies		Wetland Acres	Barren land Acres	Year totals
	1945-55	1972-75					Acres	%			
Naples Park	1945-55	1972-75	-0-	NA	NA	NA	40	3.2	821	386	1,247
			+281	NA	NA	NA	+102	+255.0	-141	-242	1,247
Bonita Beach	1945-55	1972-75	145	NA	NA	NA	64	3.9	1,213	229	1,651
			+5	NA	NA	NA	+83	+130.0	-125	-186	1,428
Big Hickory Island	1945-55	1972-75	NA	NA	NA	NA	NA	NA	129	150	279
			NA	NA	NA	NA	NA	NA	+217	-150	346
Black Island	1945-55	1972-75	-0-	-0-	NA	NA	NA	NA	278	84	362
			+126	21	NA	NA	NA	NA	218	244	609
Estero Island	1945-55	1972-75	729	NA	NA	NA	27	1.5	697	396	1,849
			+367	NA	NA	NA	-27	-100.0	-459	-125	1,578
Sanibel Island	1945-55	1972-75	-0-	-0-	NA	NA	203	1.9	10,462	-0-	10,665
			+2,310	135	NA	NA	+68	+33.0	-2,206	+701	11,673
Captiva Island	1945-55	1972-75	280	NA	NA	-0-	NA	NA	504	417	1,201
			+261	NA	NA	+35	NA	NA	624	-370	1,247
North Captiva Island	1945-55	1972-75	NA	NA	NA	NA	NA	NA	181	550	731
			NA	NA	NA	NA	NA	NA	197	-47	700
Cayo Costa	1945-55	1972-75	NA	NA	NA	780	NA	NA	1,284	449	2,513
			NA	NA	NA	+374	NA	NA	974	514	2,642
Gasparilla	1945-55	1972-75	618	NA	NA	-0-	NA	NA	890	158	1,666
			+364	NA	NA	+462	NA	NA	134	349	1,927
Little Island Group	1945-55	1972-75	-0-	NA	NA	80	-0-	0.0	841	410	1,331
			+230	NA	NA	+274	+342.0	+43	-668	+174	1,384
Manasota Key	1945-55	1972-75	41	NA	NA	-0-	NA	NA	1,068	521	1,630
			+1,024	NA	NA	+210	NA	NA	165	-174	1,787
Casey Key	1945-55	1972-75	215	NA	NA	-0-	NA	NA	572	86	873
			+246	NA	NA	+74	NA	NA	79	392	1,000
Sarasota	1945-55	1972-75	1,017	NA	NA	NA	43	1.8	1,015	302	2,377
			+1,140	NA	NA	NA	-0-	0.0	161	239	2,557
Lido Key	1945-55	1972-75	388	NA	NA	-0-	NA	NA	854	-65	1,155
			+453	NA	NA	+53	NA	NA	106	152	1,152
Longboat Key	1945-55	1972-75	460	NA	NA	166	NA	NA	475	-34	2,914
			+1,235	NA	NA	+48	NA	NA	-49.0	-326	2,939
Anna Maria Key	1945-55	1972-75	1,053	NA	NA	NA	-0-	0.0	936	365	2,354
			+874	NA	NA	NA	127	4.9	201	327	2,582
						+127	+	-735	-38	-10.0	

TABLE 22.—Changes in area values of Level I land use and land cover for 80 barrier islands off the Florida coast—Continued

Name of island	Years compared		Urban or built-up land		Agricultural land		Rangeland		Forest land		Water bodies		Wetland		Barren land		Year totals
	1945-55	1972-75	Acres	%	Acres	%	Acres	%	Acres	%	Acres	%	Acres	%	Acres	%	
Passage Key	1945-55	1972-75	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	18	100.0	18
			NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	60	100.0	60
															+42	+233.0	+233.0
Egmont Key	1945-55	1972-75	NA	NA	NA	NA	NA	NA	121	26.7	NA	NA	0-	0.0	333	73.3	454
			NA	NA	NA	NA	NA	NA	147	31.6	NA	NA	318	68.4	0-	0.0	465
									+26	+21.0			+318		-333	-100.0	+2.0
Mullet Key Group	1945-55	1972-75	0-	0.0	NA	NA	NA	NA	0-	0.0	NA	NA	1,069	87.8	148	12.2	1,217
			525	43.6	NA	NA	NA	NA	91	7.5	NA	NA	361	29.8	231	19.8	1,208
			+525	+					+91	+			-838	-78.0	+213	+144.0	-1.0
Cabbage Key Group	1945-55	1972-75	0-	0.0	NA	NA	NA	NA	0-	0.0	NA	NA	652	77.2	193	22.8	845
			326	36.3	NA	NA	NA	NA	+90	10.0	NA	NA	391	10.1	91	43.6	898
			+326	+					+90	+			-561	-86.0	+198	+102.0	+6.0
Long Key	1945-55	1972-75	516	36.8	NA	NA	NA	NA	NA	NA	NA	NA	593	42.3	293	20.7	1,402
			1,271	81.4	NA	NA	NA	NA	NA	NA	NA	NA	0-	0.0	291	18.6	1,562
			+755	+146.0					NA	NA	NA	NA	-593	-100.0	-2	-1.0	+11.0
Treasure Island	1945-55	1972-75	306	40.0	NA	NA	NA	NA	NA	NA	NA	NA	247	32.2	213	27.8	766
			824	76.1	NA	NA	NA	NA	NA	NA	NA	NA	67	6.1	193	17.8	1,084
			+518	+169.0					NA	NA	NA	NA	-180	-73.0	-20	-9.0	+41.0
Sand Key	1945-55	1972-75	2,537	79.5	NA	NA	NA	NA	0-	0.0	NA	NA	NA	NA	653	20.5	3,190
			2,412	68.3	NA	NA	NA	NA	412	11.7	NA	NA	708	20.0	708	20.0	3,532
			-125	-5.0					+412	+			NA	NA	+55	+8.0	+11.0
Clearwater Beach Island	1945-55	1972-75	359	30.3	NA	NA	NA	NA	NA	NA	NA	NA	658	55.4	170	14.3	1,187
			1,160	84.4	NA	NA	NA	NA	NA	NA	NA	NA	199	14.4	17	1.2	1,376
			+801	+223.0					NA	NA	NA	NA	-459	-70.0	-153	-90.0	+16.0
Caladesi Island	1945-55	1972-75	NA	NA	NA	NA	NA	NA	97	12.7	NA	NA	445	58.5	219	28.8	761
			NA	NA	NA	NA	NA	NA	231	35.5	NA	NA	346	58.2	74	11.3	651
									+134	+138.0			-99	-22.0	-145	-66.0	-14.0
Honeymoon Island	1945-55	1972-75	52	7.6	NA	NA	NA	NA	0-	0.0	NA	NA	459	66.8	176	25.6	687
			142	19.8	NA	NA	NA	NA	187	26.2	NA	NA	48	6.7	337	47.3	714
			+90	+173.0					+187	+			-411	-89.0	+161	+91.0	+4.0
Anclote Keys	1945-55	1972-75	NA	NA	NA	NA	NA	NA	0-	0.0	NA	NA	185	59.5	126	40.5	311
			NA	NA	NA	NA	NA	NA	32	6.1	NA	NA	303	58.2	186	35.7	521
									+32	+			+118	+64.0	+60	+48.0	+67.0
Bay Port	1945-55	1972-75	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	130	100.0	NA	NA	130
			NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	130	100.0	NA	NA	130
									NA	NA	NA	NA	0-	0.0	NA	NA	0.0
Pine Island	1945-55	1972-75	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	105	100.0	NA	NA	105
			NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	100	100.0	NA	NA	100
									NA	NA	NA	NA	-5	-5.0	NA	NA	-5.0
Chassahowitzka	1945-55	1972-75	0-	0.0	NA	NA	NA	NA	NA	NA	NA	NA	34,967	72.3	NA	NA	48,381
			168	0.3	NA	NA	NA	NA	NA	NA	NA	NA	34,606	71.3	NA	NA	48,558
			+168	+					NA	NA	NA	NA	-361	-1.0	NA	NA	+0.4
Seashore Keys	1945-55	1972-75	NA	NA	NA	NA	NA	NA	0-	0.0	NA	NA	342	92.4	28	7.6	370
			NA	NA	NA	NA	NA	NA	152	44.7	NA	NA	188	55.3	0-	0.0	340
									+152	+			-154	-45.0	-28	-100.0	-8.0
Cedar Keys	1945-55	1972-75	184	17.7	NA	NA	NA	NA	NA	NA	NA	NA	858	82.3	NA	NA	1,042
			509	53.7	NA	NA	NA	NA	NA	NA	NA	NA	440	46.3	NA	NA	949
			+325	+177.0					NA	NA	NA	NA	-418	-49.0	NA	NA	-9.0
Piney Island	1945-55	1972-75	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	1,337	100.0	NA	NA	1,337
			NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	1,409	100.0	NA	NA	1,409
									NA	NA	NA	NA	-72	+5.0	NA	NA	+5.0

APPENDIX I: TABLES OF AREA VALUES OF LAND USE AND LAND COVER

TABLE 22.—Changes in area values of Level I land use and land cover for 80 barrier islands off the Florida coast—Continued

Name of island	Years compared	Urban or built-up land		Agricultural land		Rangeland Acres	Rangeland %	Forest land Acres	Forest land %	Water bodies Acres	Water bodies %	Wetland Acres	Wetland %	Barren land Acres	Barren land %	Year totals
		Acres	%	Acres	%											
Mashes Island	1945-55	-0-	0.0	NA	NA	NA	NA	-0-	0.0	NA	NA	1,677	94.3	108	5.7	1,785
	1972-75	146	9.0	NA	NA	NA	NA	749	46.5	NA	NA	587	36.5	129	8.0	1,611
	Δ	+146	+					+749	+			-1,090	-65.0	+21	+19.0	-10.0
Alligator Point	1945-55	-0-	0.0	NA	NA	NA	NA	1,984	49.0	106	2.6	1,153	28.4	810	20.0	4,053
	1972-75	746	19.4	NA	NA	NA	NA	1,911	50.0	80	2.0	836	21.8	262	6.8	3,835
	Δ	+746	+					-73	-4.0	-26	-24.0	-317	-27.0	-548	-68.0	-5.0
Dog Island	1945-55	-0-	0.0	NA	NA	NA	NA	74	4.1	NA	NA	1,181	65.4	551	30.5	1,806
	1972-75	388	31.4	NA	NA	NA	NA	80	4.4	NA	NA	1,012	55.9	331	18.3	1,811
	Δ	+388	+					+6	+8.0			-167	-14.0	-220	-40.5	+0.3
St. George Island	1945-55	-0-	0.0	NA	NA	NA	NA	3,180	49.5	-0-	0.0	941	14.6	2,310	35.9	6,431
	1972-75	578	8.8	NA	NA	NA	NA	2,792	42.6	46	0.7	883	13.5	2,255	34.4	6,554
	Δ	+578	+					-383	-12.0	46+	+	-58	-6.0	-55	-2.0	+2.0
St. Vincent Island	1945-55	NA	NA	NA	NA	NA	NA	7,210	59.1	188	1.6	4,219	34.6	578	4.7	12,195
	1972-75	NA	NA	NA	NA	NA	NA	8,378	65.5	140	1.1	3,665	28.7	599	4.7	12,782
	Δ							+1,168	+6.0	-49	-25.0	-1,054	-25.0	+21	+4.0	+5.0
Indian Peninsula	1945-55	42	11.1	NA	NA	NA	NA	157	41.3	NA	NA	NA	NA	181	47.6	380
	1972-75	58	14.9	NA	NA	NA	NA	139	36.0	NA	NA	NA	NA	190	49.1	387
	Δ	+16	+38.0					-18	-11.0					+9	+5.0	+2.0
Cape San Blas	1945-55	-0-	0.0	NA	NA	279	4.8	3,840	66.7	-0-	0.0	291	5.1	1,344	23.4	5,754
	1972-75	326	5.6	NA	NA	182	3.2	3,660	63.5	49	0.8	251	4.3	1,298	22.6	5,766
	Δ	+326	+			-97	-35.0	-180	-5.0	+49	+	-40	-14.0	-46	-3.0	+0.2
Crooked Island	1945-55	NA	NA	NA	NA	-0-	0.0	365	21.2	54	3.1	NA	NA	1,305	75.7	1,724
	1972-75	NA	NA	NA	NA	81	4.7	527	31.2	-0-	0.0	NA	NA	1,083	64.1	1,691
	Δ					+81	+	+162	+44.0	-54	-100.0			-222	-17.0	-2.0
Shell Island	1945-55	NA	NA	NA	NA	NA	NA	-0-	0.0	-0-	0.0	618	41.8	862	58.2	1,480
	1972-75	NA	NA	NA	NA	270	20.2	270	20.2	15	1.1	114	8.5	938	70.2	1,337
	Δ					+270	+	+270	+	+15	+	-504	-82.0	+76	+9.0	-10.0
St. Andrew	1945-55	-0-	0.0	NA	NA	NA	NA	-0-	0.0	-0-	0.0	602	34.2	1,159	65.8	1,761
	1972-75	1,621	93.6	NA	NA	NA	NA	92	5.3	20	1.1	-0-	0.0	-0-	0.0	1,733
	Δ	+1,621	+					+92	+	+20	+	-602	-100.0	-1,159	-100.0	-2.0
Miramar	1945-55	419	3.8	NA	NA	NA	NA	5,240	47.8	231	2.1	2,716	24.8	2,361	21.5	10,967
	1972-75	2,472	22.2	NA	NA	NA	NA	4,851	43.8	226	2.0	1,921	17.3	1,638	14.7	11,108
	Δ	+2,053	+490.0					-389	-7.0	-5	-2.0	-795	-29.0	-723	-31.0	+1.0
Santa Rosa Island	1945-55	-0-	0.0	NA	NA	-0-	0.0	-0-	0.0	101	0.9	1,197	11.0	9,582	88.1	10,880
	1972-75	2,642	23.5	NA	NA	60	0.5	569	5.0	41	0.3	300	2.6	7,608	68.1	11,220
	Δ	+2,642	+			+60	+	+569	+	-60	-59.0	-897	-75.0	-1,974	-21.0	+3.0
Perdido Key East	1945-55	-0-	0.0	NA	NA	NA	NA	-0-	0.0	-0-	0.0	694	23.3	2,280	76.7	2,974
	1972-75	520	17.7	NA	NA	NA	NA	705	24.1	6	0.2	32	1.0	1,664	57.0	2,927
	Δ	+520	+					+705	+	+6	+	-662	-95.0	-616	-27.0	-2.0
Category totals	1945-55	32,007	6.2	3,057	0.6	593	0.1	69,505	13.5	75,722	14.7	281,186	54.6	52,835	10.3	514,905
and	1972-75	101,988	19.7	2,437	0.5	1,260	0.2	56,001	10.8	73,769	14.2	244,791	47.1	38,687	7.5	518,933
Change totals	Δ	+69,981	+219.0	-620	-20.0	+667	+112.0	-13,504	-19.0	-1,953	-3.0	-36,940	-13.0	-14,143	-27.0	+0.2

TABLE 23.—Changes in area values of Level I land use and land cover for 5 barrier islands off the Alabama coast

Name of island	Years compared		Urban or built-up land Acres	%	Agricultural land		Rangeland Acres	%	Forest land Acres	%	Water bodies		Wetland Acres	%	Barren land		Year totals
	1945-55	1972-75			Acres	%					Acres	%			Acres	%	
Perdido Key West	1945-55	1972-75	0-	0.0	NA	NA	NA	NA	0-	0.0	27	1.8	1,284	85.9	183	12.3	1,494
	Δ		+275	18.6	NA	NA	NA	NA	+922	62.8	-0-	0.0	-1,169	-91.0	-23	-13.0	1,472
Romar Beach	1945-55	1972-75	0-	0.0	NA	NA	0-	0.0	0-	0.0	807	20.3	2,242	56.6	916	23.1	3,965
	Δ		+1,075	23.3	NA	NA	+281	6.1	+653	14.2	-24	-30.0	-956	-48.0	-168	-18.0	4,606
Mobile Point	1945-55	1972-75	0-	0.0	NA	NA	0-	0.0	3,479	19.8	2,564	14.6	8,435	48.0	3,085	17.6	17,563
	Δ		+2,650	15.4	NA	NA	+1,849	10.6	+1,782	51.0	-4	-0.2	-4,794	-57.0	-1,761	-57.0	17,285
Sand Island	1945-55	1972-75	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	42	100.0	42
	Δ		NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	230	100.0	230
Dauphin Island	1945-55	1972-75	0-	0.0	NA	NA	NA	NA	822	24.1	NA	NA	1,327	38.8	1,268	37.1	3,417
	Δ		+1,273	27.5	NA	NA	NA	NA	-707	-86.0	NA	NA	1,645	35.7	1,587	34.4	4,620
Category totals and Change totals	1945-55	1972-75	0-	0.0	NA	NA	0-	0.0	4,301	16.2	3,398	12.8	13,288	50.2	5,494	20.8	26,481
	Δ		+5,273	18.7	NA	NA	+2,180	7.5	+6,951	24.8	-275	-8.0	-6,601	-50.0	-1,445	-26.0	28,213

TABLE 24.—Changes in area values of Level I land use and land cover for 5 barrier islands off the Mississippi coast

Name of island	Years compared		Urban or built-up land Acres	%	Agricultural land		Rangeland Acres	%	Forest land Acres	%	Water bodies		Wetland Acres	%	Barren land		Year totals
	1945-55	1972-75			Acres	%					Acres	%			Acres	%	
Petit Bois Island	1945-55	1972-75	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	1,066	67.1	523	32.9	1,589
	Δ		NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	-208	-20.0	+232	+44.0	1,613
Horn Island	1945-55	1972-75	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	1,986	52.0	1,837	48.0	3,823
	Δ		NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	2,470	69.7	1,075	30.3	3,545
Deer Island	1945-55	1972-75	NA	NA	NA	NA	NA	NA	0-	0.0	NA	NA	479	96.4	18	3.6	497
	Δ		NA	NA	NA	NA	NA	NA	+179	45.9	NA	NA	211	54.1	-0-	0.0	390
Ship Island	1945-55	1972-75	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	448	35.3	822	64.7	1,270
	Δ		NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	678	40.3	1,005	59.7	1,683
Cat Island	1945-55	1972-75	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	1,967	78.7	532	21.3	2,499
	Δ		NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	1,747	70.7	749	30.0	2,496
Category totals and Change totals	1945-55	1972-75	NA	NA	NA	NA	NA	NA	0-	0.0	NA	NA	5,946	61.4	3,732	38.6	9,678
	Δ		NA	NA	NA	NA	NA	NA	+179	1.8	NA	NA	5,964	61.4	3,584	36.8	9,727

APPENDIX I: TABLES OF AREA VALUES OF LAND USE AND LAND COVER

TABLE 25.—Changes in area values of Level I land use and land cover for 18 barrier islands off the Louisiana coast

Name of island	Years compared	Urban or built-up land		Agricultural land		Rangeland		Forest land		Water bodies		Wetland		Barren land		Year totals
		Acres	%	Acres	%	Acres	%	Acres	%	Acres	%	Acres	%	Acres	%	
Chandeleur Island Group	1945-55	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	6,387	62.4	3,840	37.6	10,227
	1972-75	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	6,387	62.4	3,840	37.6	10,227
Grand Gosier Island	1945-55	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	668	100.0	668
	1972-75	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	691	100.0	691
Breton Island	1945-55	10	1.1	NA	NA	NA	NA	NA	NA	NA	NA	531	55.9	409	43.0	950
	1972-75	45	4.6	NA	NA	NA	NA	NA	NA	NA	NA	365	38.0	550	57.4	960
Sable Island	1945-55	+35	+350.0	NA	NA	NA	NA	NA	NA	NA	NA	-166	-31.0	+141	+1.0	950
	1972-75	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	132	100.0	NA	NA	132
Raccoon Point	1945-55	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	134	100.0	NA	NA	134
	1972-75	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	+2	+2.0	NA	NA	134
Coquille Point	1945-55	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	774	100.0	NA	NA	774
	1972-75	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	-6	-1.0	NA	NA	768
Bird Island	1945-55	162	7.1	NA	NA	NA	NA	NA	NA	NA	NA	2,129	92.9	NA	NA	2,291
	1972-75	358	16.4	NA	NA	NA	NA	NA	NA	NA	NA	1,817	83.6	NA	NA	2,175
Pelican Island <sup>1</sup>	1945-55	+196	+121.0	NA	NA	NA	NA	NA	NA	NA	NA	-312	-15.0	NA	NA	51
	1972-75	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	65	100.0	NA	NA	65
Bastian Island <sup>1</sup>	1945-55	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	51	100.0	NA	NA	51
	1972-75	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	-14	-22.0	NA	NA	36
Bay Joe Wise	1945-55	13	0.5	NA	NA	NA	NA	NA	NA	NA	NA	1,472	64.0	NA	NA	1,485
	1972-75	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	---	---	NA	NA	1,472
Bay Lamer	1945-55	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	---	---	NA	NA	2,304
	1972-75	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	1,286	99.3	NA	NA	1,286
Ronquille Island	1945-55	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	461	100.0	NA	NA	461
	1972-75	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	467	100.0	NA	NA	467
Grande Terre Island Group	1945-55	-0-	0.0	NA	NA	NA	NA	NA	NA	NA	NA	4,386	81.9	NA	NA	5,354
	1972-75	2,547	47.8	NA	NA	NA	NA	NA	NA	NA	1,037	1,753	32.8	NA	NA	5,337
Grand Isle	1945-55	+2,547	+	NA	NA	NA	NA	NA	NA	NA	+69	-2,633	-60.0	NA	NA	5,337
	1972-75	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	251	100.0	NA	NA	251
Grand Isle	1945-55	45	7.8	NA	NA	NA	NA	NA	NA	NA	NA	235	100.0	NA	NA	280
	1972-75	160	6.5	NA	NA	NA	NA	NA	NA	NA	NA	2,411	98.2	NA	NA	2,571
Grand Isle	1945-55	+113	+256.0	NA	NA	NA	NA	NA	NA	NA	NA	-120	-5.0	NA	NA	2,451
	1972-75	1,121	29.0	NA	NA	NA	NA	NA	NA	NA	360	1,622	42.0	761	19.7	3,864
Grand Isle	1945-55	1,901	48.0	NA	NA	NA	NA	NA	NA	NA	397	1,421	35.9	243	6.1	3,962
	1972-75	+680	+70.0	NA	NA	NA	NA	NA	NA	NA	+37	-201	-12.0	-518	-68.0	3,962

<sup>1</sup> No photographic coverage for 1945-55; totals do not include data for these islands.

TABLE 25.—Changes in area values of Level I land use and land cover for 18 barrier islands off the Louisiana coast—Continued

Name of island	Years compared	Urban or built-up land		Agricultural land		Rangeland		Forest land		Water bodies		Wetland		Barren land		Year totals	
		Acres	%	Acres	%	Acres	%	Acres	%	Acres	%	Acres	%	Acres	%		
Caminada	1945-55	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	136	68.7	62	31.3	198	
	1972-75	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	186	100.0	-0-	0.0	186	
East Timbalier Island	1945-55	-0-	0.0	NA	NA	NA	NA	NA	NA	NA	NA	1,113	78.0	314	22.0	1,427	
	1972-75	141	10.3	NA	NA	NA	NA	NA	NA	NA	NA	1,146	84.6	70	5.1	1,357	
Timbalier Island	1945-55	313	10.9	NA	NA	NA	NA	NA	NA	NA	NA	33	+3.0	-244	-78.0	-5.0	
	1972-75	1,594	35.9	NA	NA	NA	NA	NA	NA	NA	NA	2,803	63.3	38	0.8	4,435	
Isle Dernieres	1945-55	1,281	409.0	NA	NA	NA	NA	NA	NA	NA	NA	915	+48.0	-632	-94.0	55.0	
	1972-75	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	4,161	81.0	887	17.2	5,139	
Category totals and Change totals	1945-55	1,651	4.5	NA	NA	NA	NA	NA	NA	NA	91	1.8	44	+1.0	-81	-9.0	37,128
	1972-75	6,746	17.5	NA	NA	NA	NA	NA	NA	70	1.3	4,205	82.9	806	15.8	5,081	
		+5,095	+309.0	NA	NA	NA	NA	NA	NA	-21	-23.0	26,447	71.2	7,611	20.5	38,518	
				NA	NA	NA	NA	NA	NA	+85	+6.0	24,030	62.4	6,238	16.2	38,518	
				NA	NA	NA	NA	NA	NA			-2,417	-9.0	-1,473	-18.0	+4.0	

APPENDIX I: TABLES OF AREA VALUES OF LAND USE AND LAND COVER

TABLE 26.—Changes in area values of Level I land use and land cover for 16 barrier islands off the Texas coast

Name of island	Years compared		Urban or built-up land Acres	Agricultural land Acres	Rangeland Acres	Forest land Acres	Water bodies Acres	Wetland		Barren land		Year totals
	1945-55	1972-75						Acres	%	Acres	%	
Bolivar Peninsula	1945-55	1972-75	817	65	NA	NA	1,589	21,061	86.6	781	3.2	24,313
	Δ	Δ	+2,370	-65	NA	NA	-136	-167	-4.0	-435	-66.0	25,280
Galveston Island	1945-55	1972-75	7,215	NA	NA	NA	811	18,566	65.0	1,987	7.0	28,579
	Δ	Δ	+2,507	NA	NA	NA	-43	-729	-4.0	-733	-37.0	29,581
Rattlesnake Point	1945-55	1972-75	0	NA	NA	NA	NA	3,977	83.9	258	6.1	4,235
	Δ	Δ	+147	NA	NA	NA	NA	-221	-6.0	+74	+29.0	4,235
Follets Island	1945-55	1972-75	0	NA	NA	NA	411	1,153	45.4	977	38.4	2,541
	Δ	Δ	+531	NA	NA	NA	-21	-231	-20.0	-292	-30.0	2,528
Brazos	1945-55	1972-75	0	NA	NA	NA	162	1,648	49.4	1,524	45.7	3,334
	Δ	Δ	+147	NA	NA	NA	141	1,754	52.9	1,274	38.5	3,316
Cedar Lakes	1945-55	1972-75	NA	NA	NA	NA	1,991	4,248	54.3	1,579	20.2	7,818
	Δ	Δ	NA	NA	NA	NA	1,978	4,262	54.5	1,587	20.2	7,827
Brown Cedar	1945-55	1972-75	NA	NA	NA	NA	NA	781	53.1	689	46.9	1,470
	Δ	Δ	NA	NA	NA	NA	NA	-7	-1.0	-4	0.0	1,459
Matagorda Peninsula East	1945-55	1972-75	NA	NA	NA	NA	248	6,310	55.7	4,762	42.1	11,320
	Δ	Δ	NA	NA	NA	NA	224	6,234	55.2	4,838	42.9	11,296
Matagorda Peninsula West	1945-55	1972-75	365	NA	5,472	NA	82	6,319	37.5	4,612	27.4	16,850
	Δ	Δ	+77	NA	-148	NA	+90	+1,278	+20.0	+495	+11.0	18,662
Matagorda Island	1945-55	1972-75	596	NA	23,079	NA	3,610	23,000	41.0	5,790	10.3	56,075
	Δ	Δ	+1,042	NA	-1,070	NA	+192	-171	-1.0	+66	+1.0	56,134
St. Joseph Island	1945-55	1972-75	0	0	10,390	816	251	22,314	49.7	11,151	24.8	44,932
	Δ	Δ	+13	88	10,809	1,152	281	21,216	46.6	11,946	26.3	45,505
Mustang Island	1945-55	1972-75	253	NA	11,604	48.3	343	8,612	35.8	3,210	13.4	24,022
	Δ	Δ	+1,298	NA	-316	NA	-37	8,093	33.9	2,878	12.1	23,863
Padre Island North	1945-55	1972-75	0	NA	18,811	44.6	NA	8,219	19.5	15,131	35.9	42,161
	Δ	Δ	+807	NA	-2,090	NA	NA	7,550	18.2	16,283	39.4	41,361
Padre Island Central	1945-55	1972-75	NA	NA	11,484	18.7	NA	31,214	50.8	18,791	30.5	61,489
	Δ	Δ	NA	NA	+598	NA	NA	+1,656	+5.0	+1,381	+7.0	65,124
Padre Island South	1945-55	1972-75	0	NA	5,123	12.7	NA	26,157	64.9	9,052	22.4	40,332
	Δ	Δ	+1,478	NA	-3,891	9.7	NA	25,920	64.6	8,806	22.0	40,095
Brazos Island	1945-55	1972-75	NA	NA	3,164	41.1	NA	4,276	55.6	251	3.3	7,691
	Δ	Δ	NA	NA	+17	NA	NA	4,250	55.3	160	2.1	7,687
Category totals and Change totals	1945-55	1972-75	9,246	65	89,127	23.6	816	187,855	49.8	80,545	21.4	377,162
	Δ	Δ	+10,164	+23	-3,822	-4.0	+336	186,158	51.2	82,209	21.0	383,953

**TABLE 27.—Summary of changes in area values of Level I land use and land cover for all Atlantic and Gulf Coast barrier islands in the 8 regional groups**  
 [Data do not include those islands that had no photographic coverage in 1945-55 (see tables 9, 12, and 25); acres in **boldface type**; percents in **lightface**.]

Name of island	Years compared	Urban or built-up land		Agricultural land		Rangeland		Forest land		Water bodies		Wetland		Barren land		Totals
		Acres	%	Acres	%	Acres	%	Acres	%	Acres	%	Acres	%	Acres	%	
Category totals/ all islands	1945-55 1972-75	90,410 228,679	5.5 13.6	14,746 10,160	0.9 0.6	101,019 98,812	6.1 5.9	168,161 152,224	10.2 9.1	101,992 101,250	6.2 6.0	918,015 838,882	55.6 50.0	256,357 249,241	15.5 14.8	1,650,700 1,679,248
Change totals/ all islands	Δ	+138,269	+153.0	-4,586	-31.0	-2,207	-2.0	-15,937	-10.0	-742	-0.7	-79,133	-9.0	-7,116	-3.0	+2.0



## APPENDIX II

Index maps (figs. 2-7) and land use and land cover maps (figs. 8-125) of the Atlantic and Gulf Coast barrier islands, 1972-75.



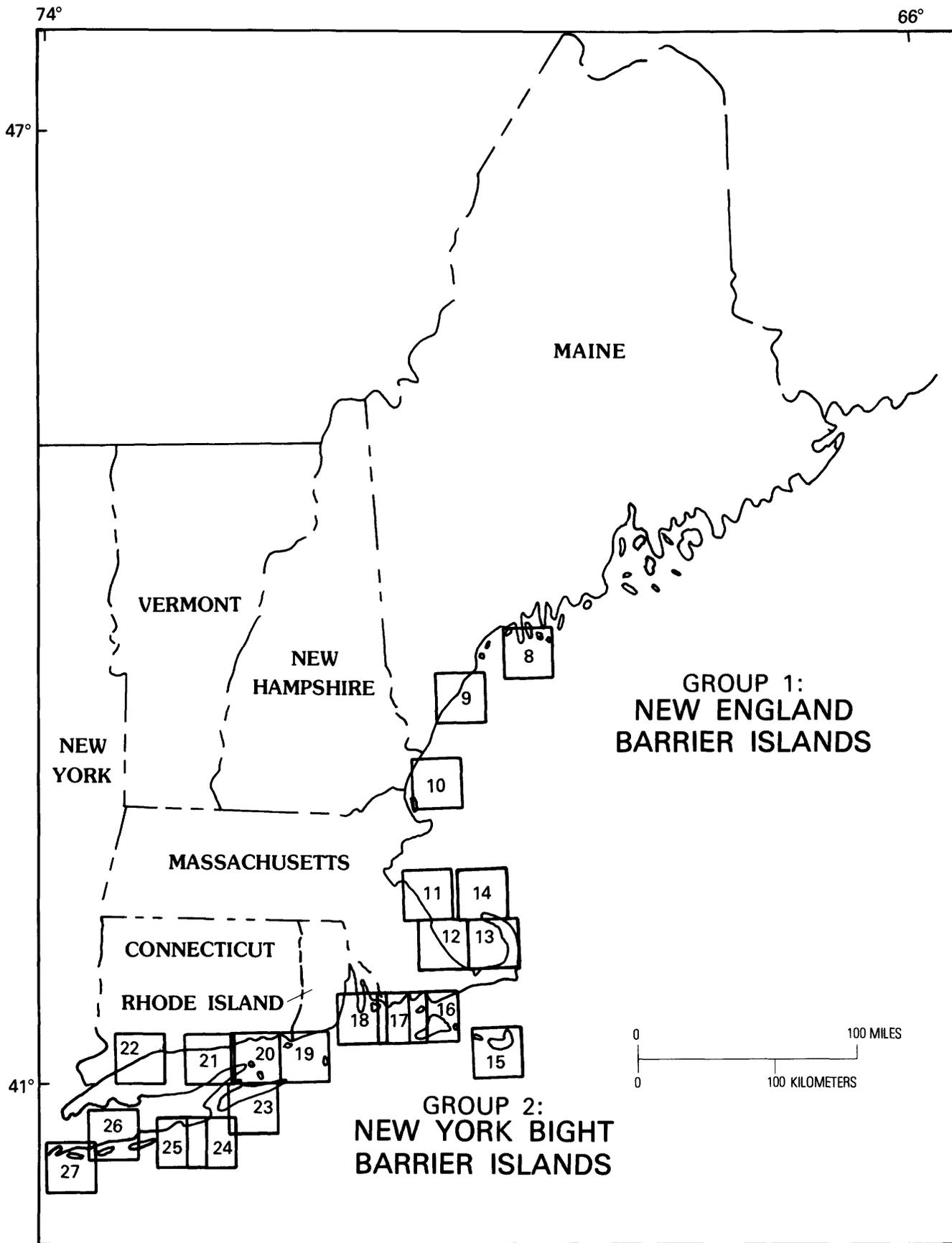


FIGURE 2.—Index to land use and land cover maps of the New England and New York Bight barrier islands.

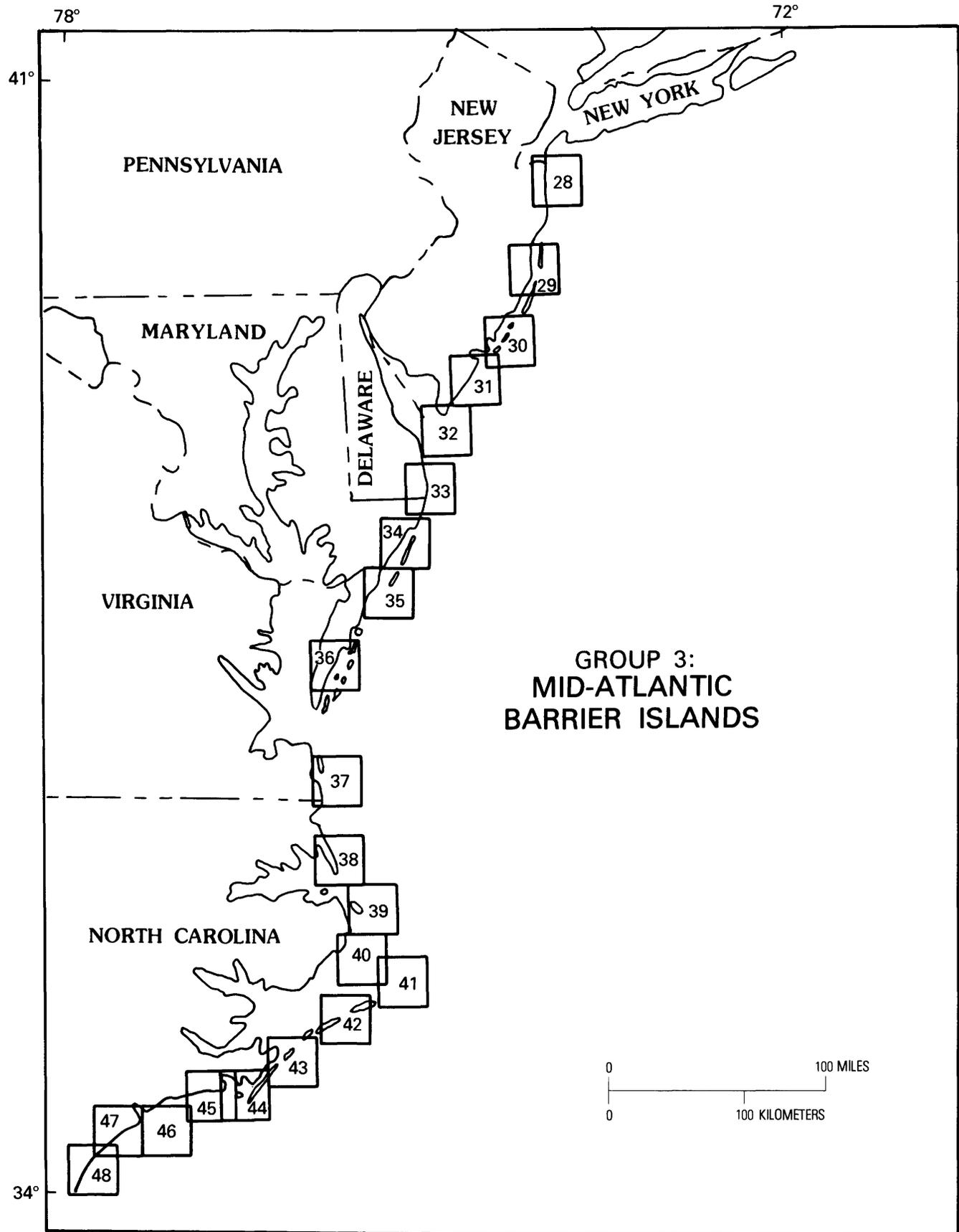


FIGURE 3.—Index to land use and land cover maps of the Mid-Atlantic barrier islands.

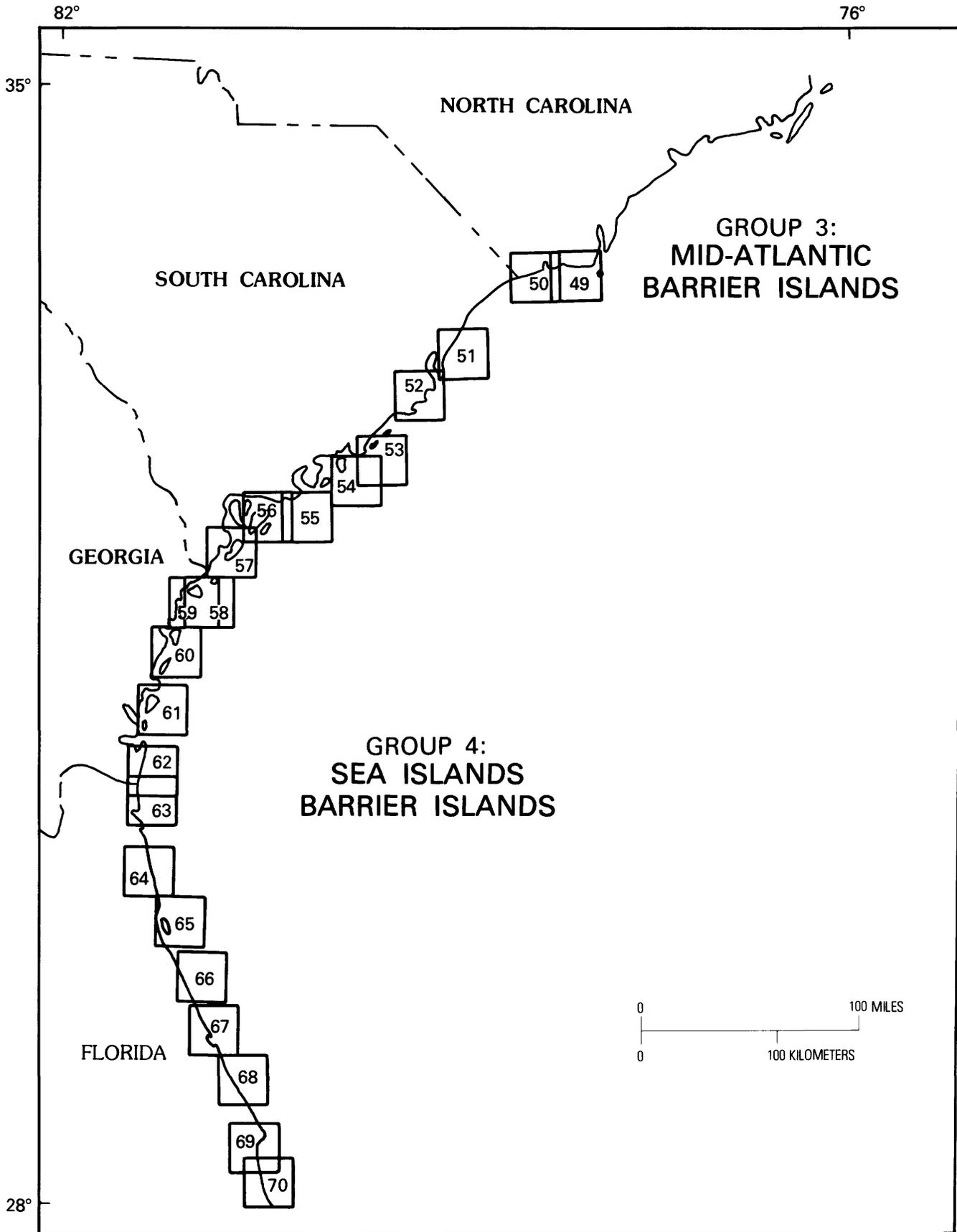


FIGURE 4.—Index to land use and land cover maps of the Mid-Atlantic, Sea Islands, and Florida Atlantic barrier islands.

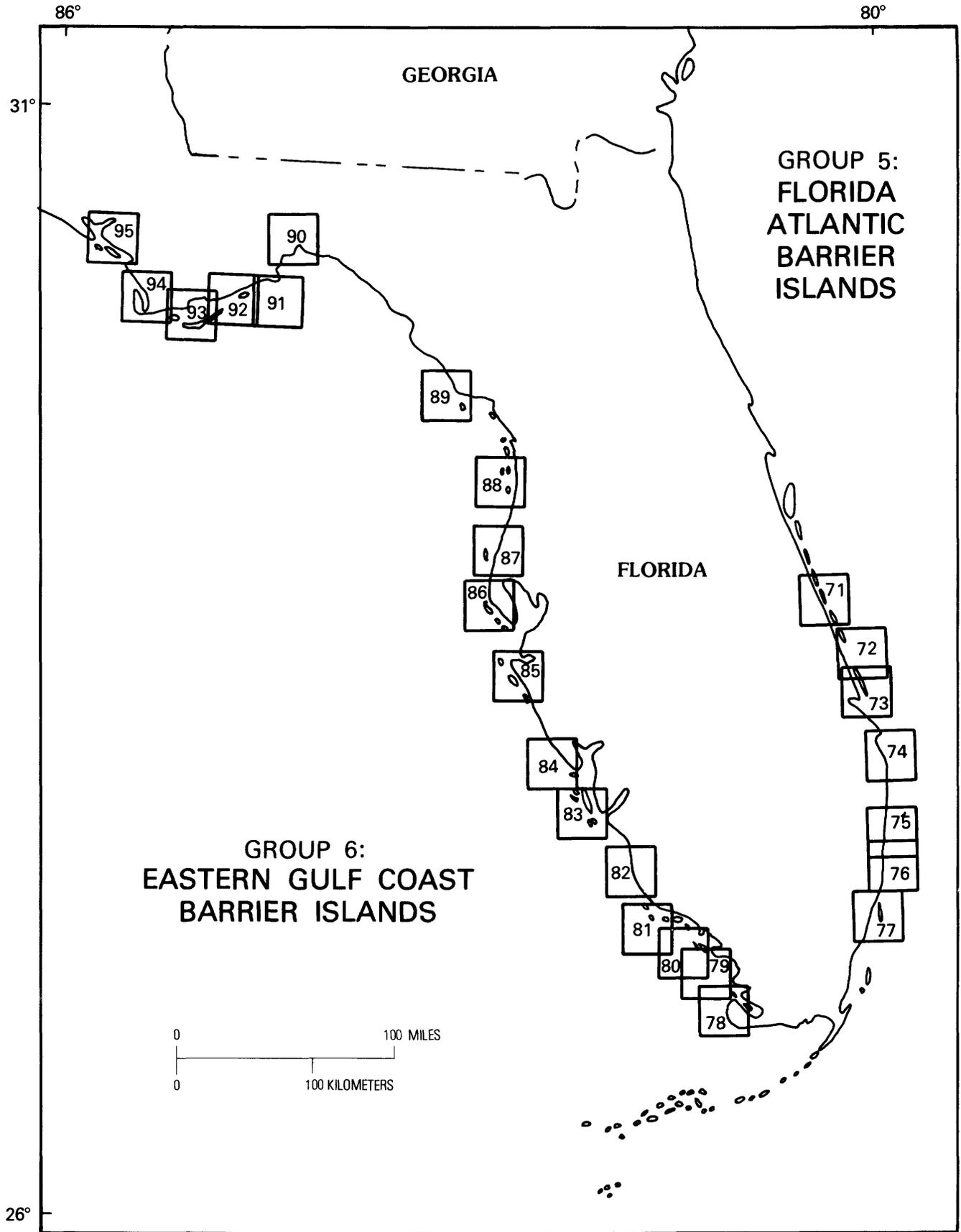


FIGURE 5.—Index to land use and land cover maps of the Florida and Eastern Gulf barrier islands.

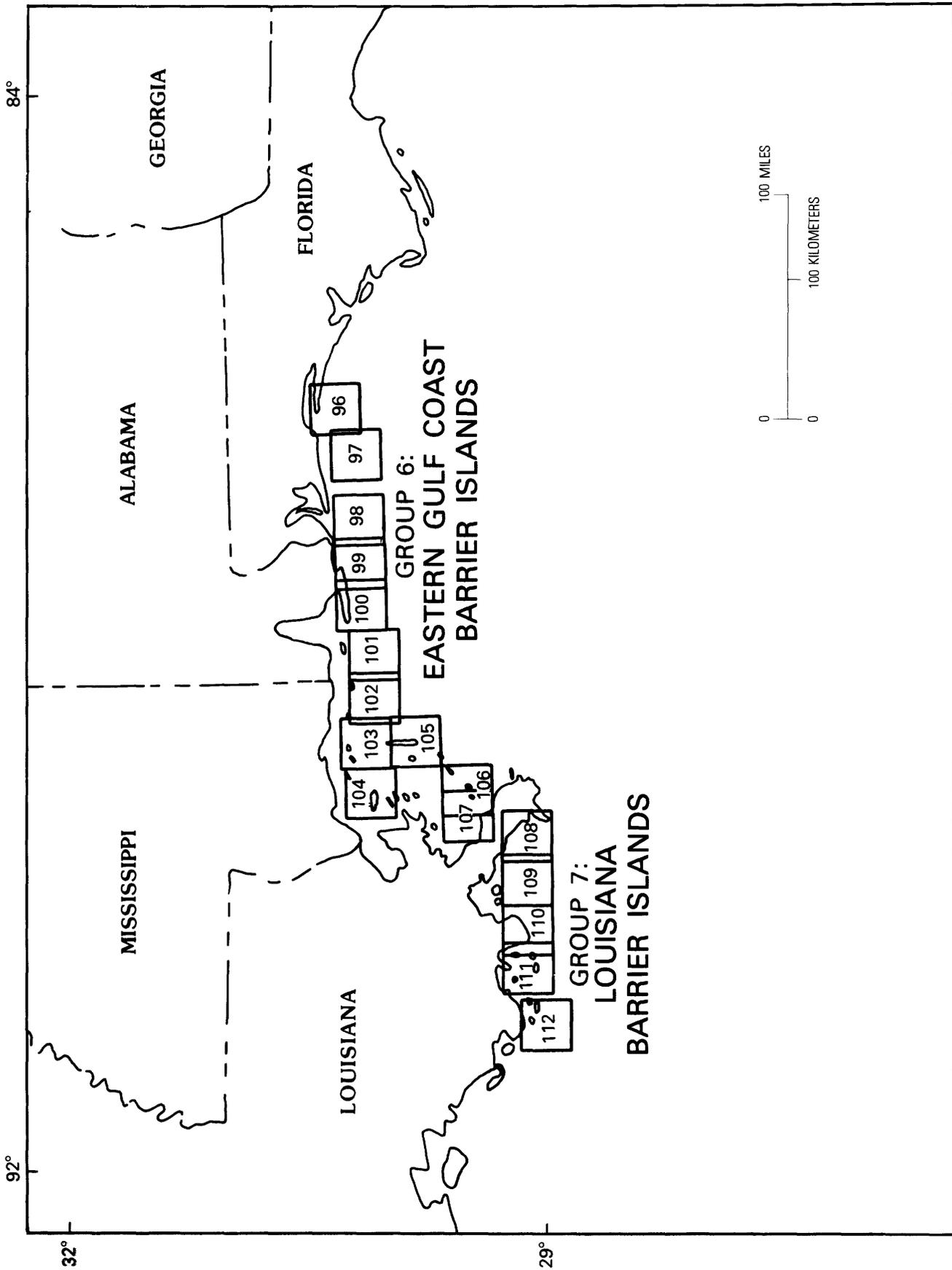


FIGURE 6.— Index to land use and land cover maps of the Eastern Gulf and Louisiana barrier islands.

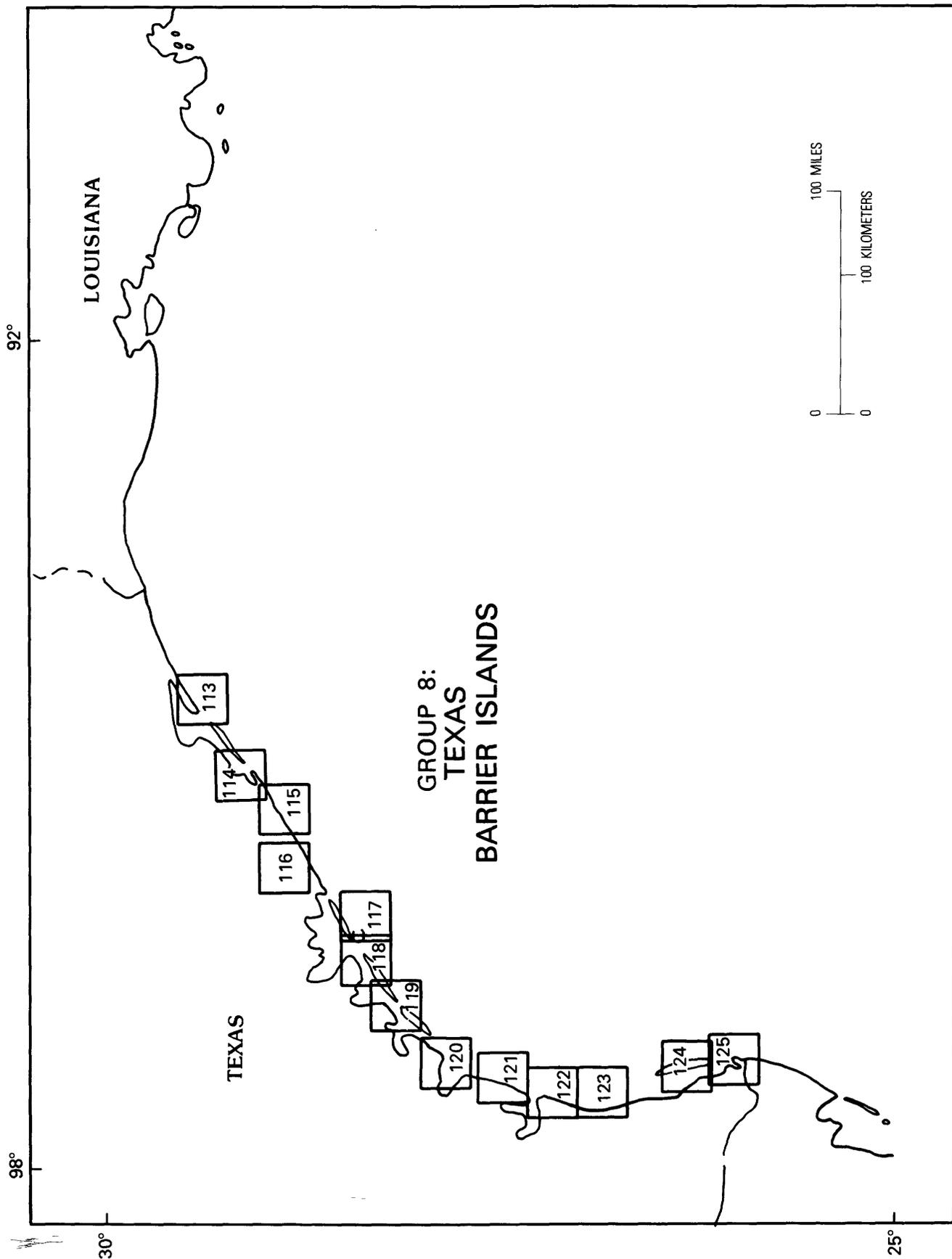


FIGURE 7.—Index to land use and land cover maps of the Texas barrier islands.



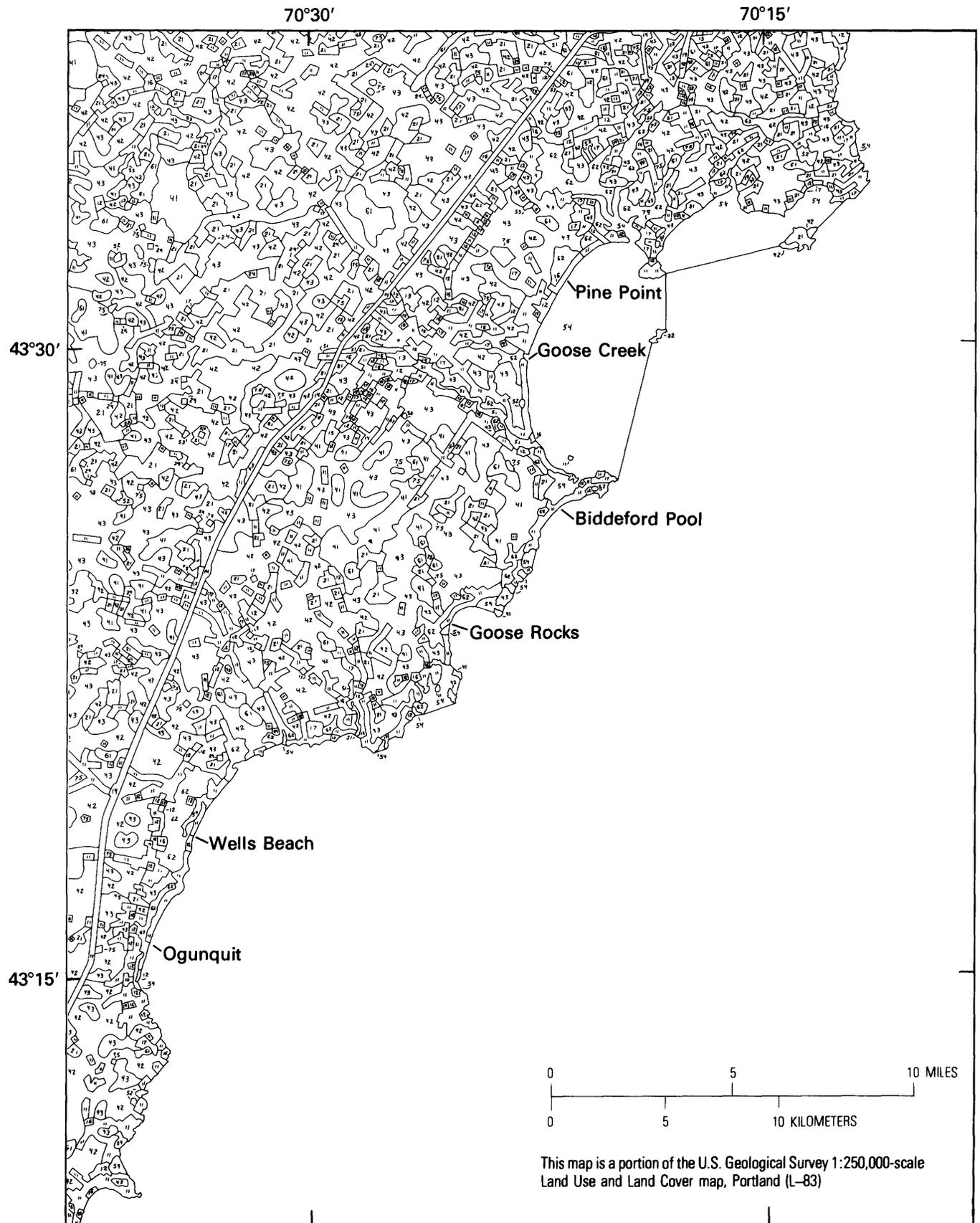


FIGURE 9.—Land use and land cover map of the coastal area near Portland, Maine, with associated barrier islands.

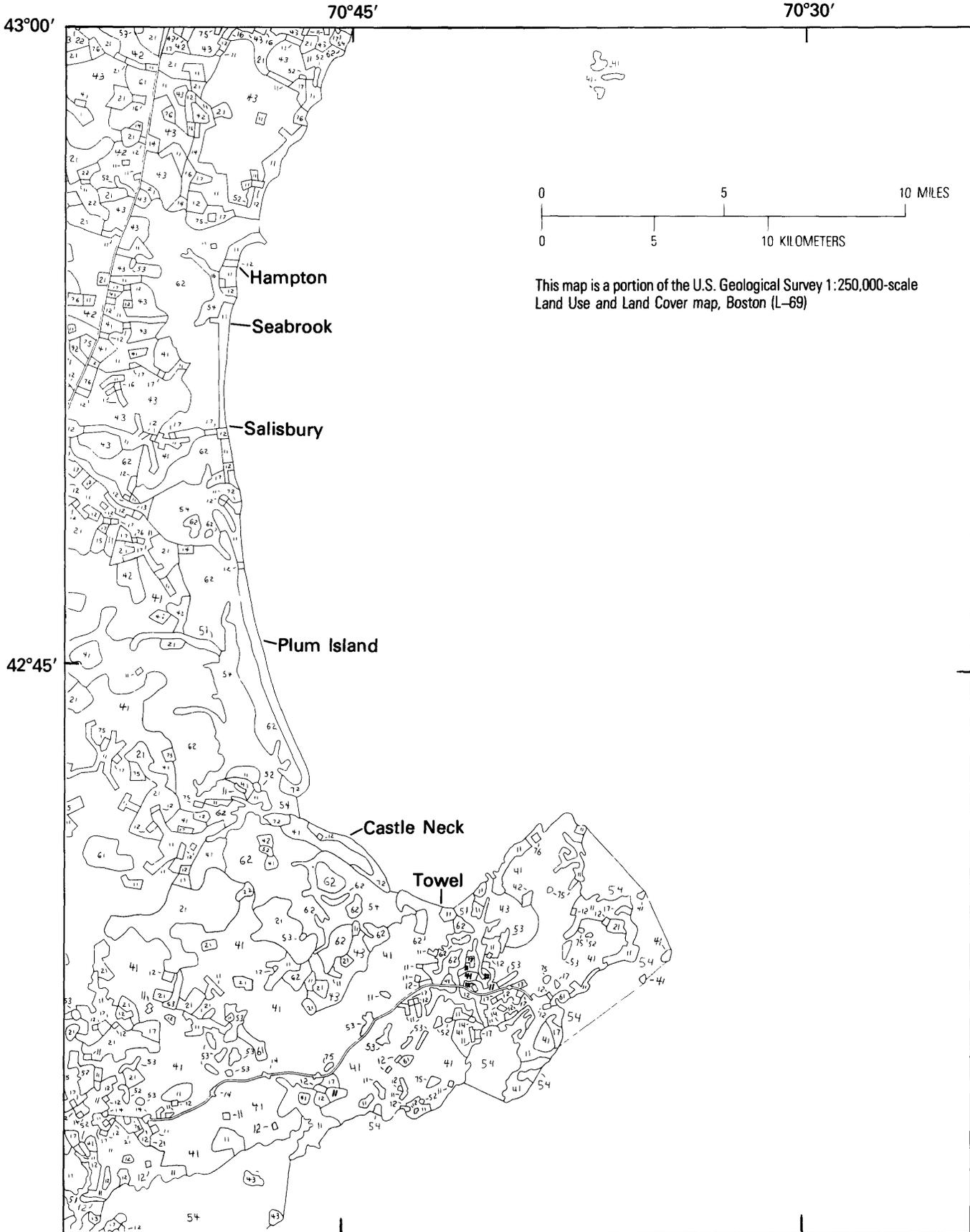


FIGURE 10. - Land use and land cover map of the coastal area near Gloucester, Mass., with associated barrier islands.

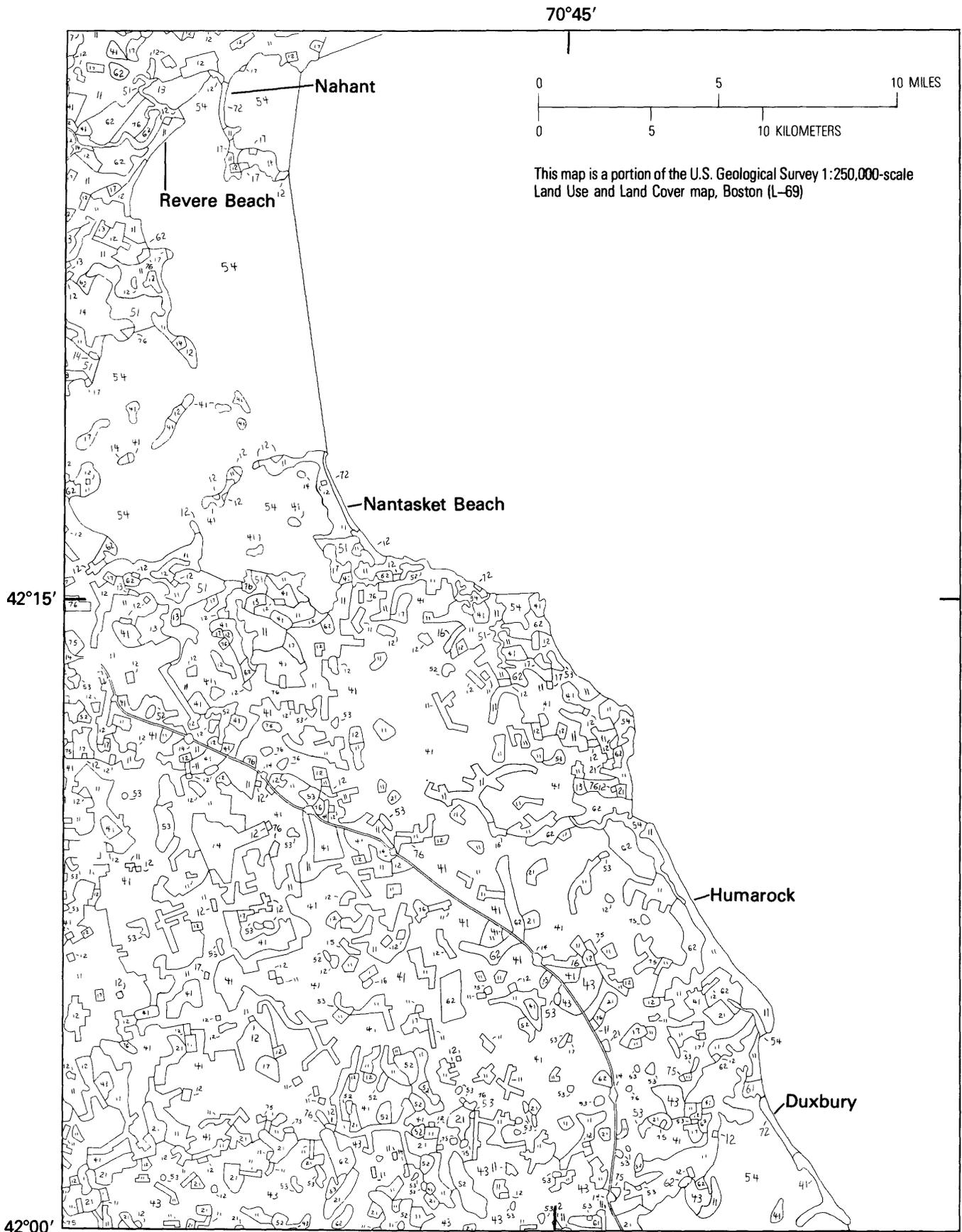


FIGURE 11. - Land use and land cover map of the coastal area near Boston, Mass., with associated barrier islands.





FIGURE 13.—Land use and land cover map of the coastal area near Cape Cod, Mass., with associated barrier islands.

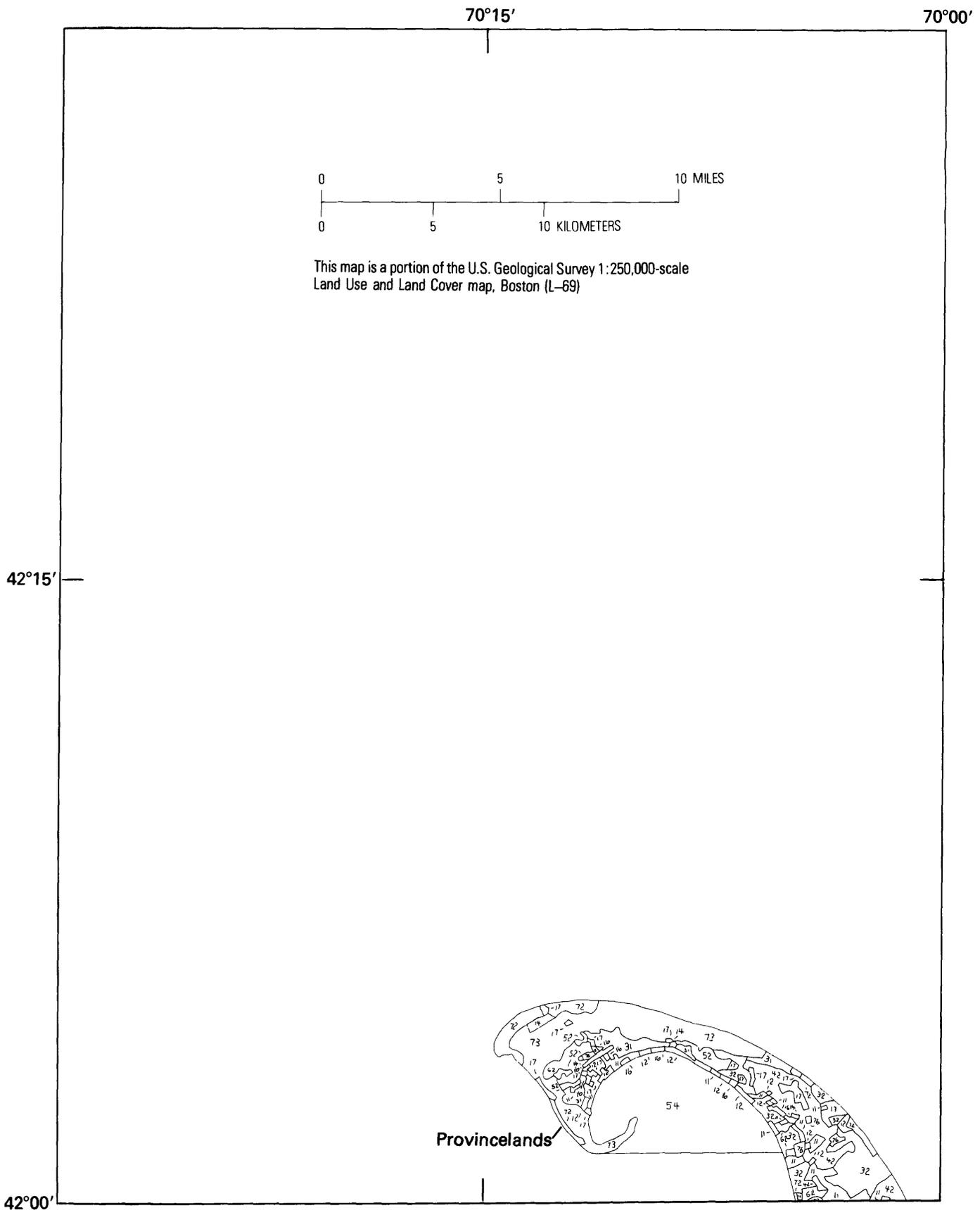


FIGURE 14.—Land use and land cover map of the coastal area near Provincetown, Mass., with associated barrier islands.

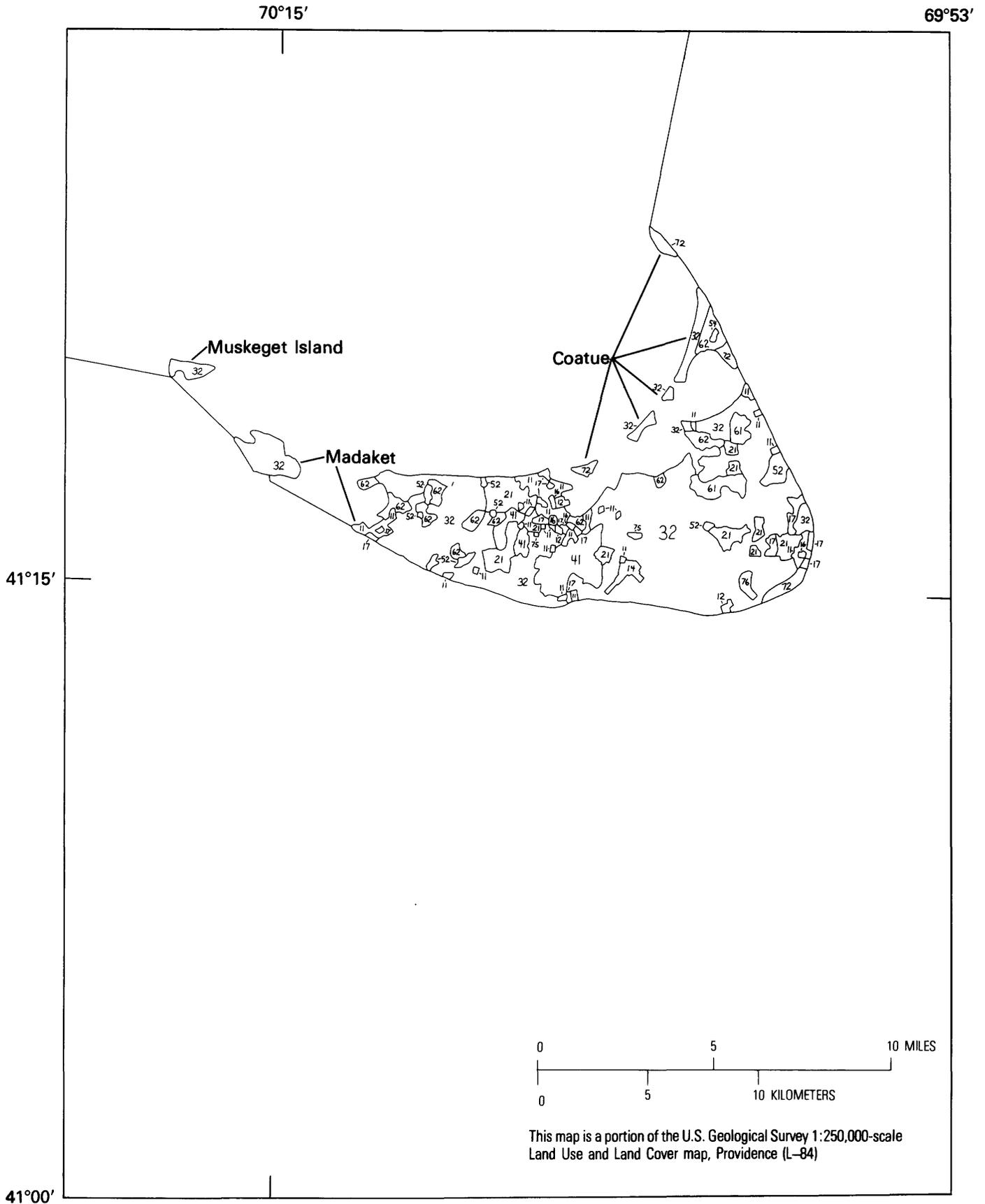


FIGURE 15. - Land use and land cover map of the coastal area near Nantucket, Mass., with associated barrier islands.

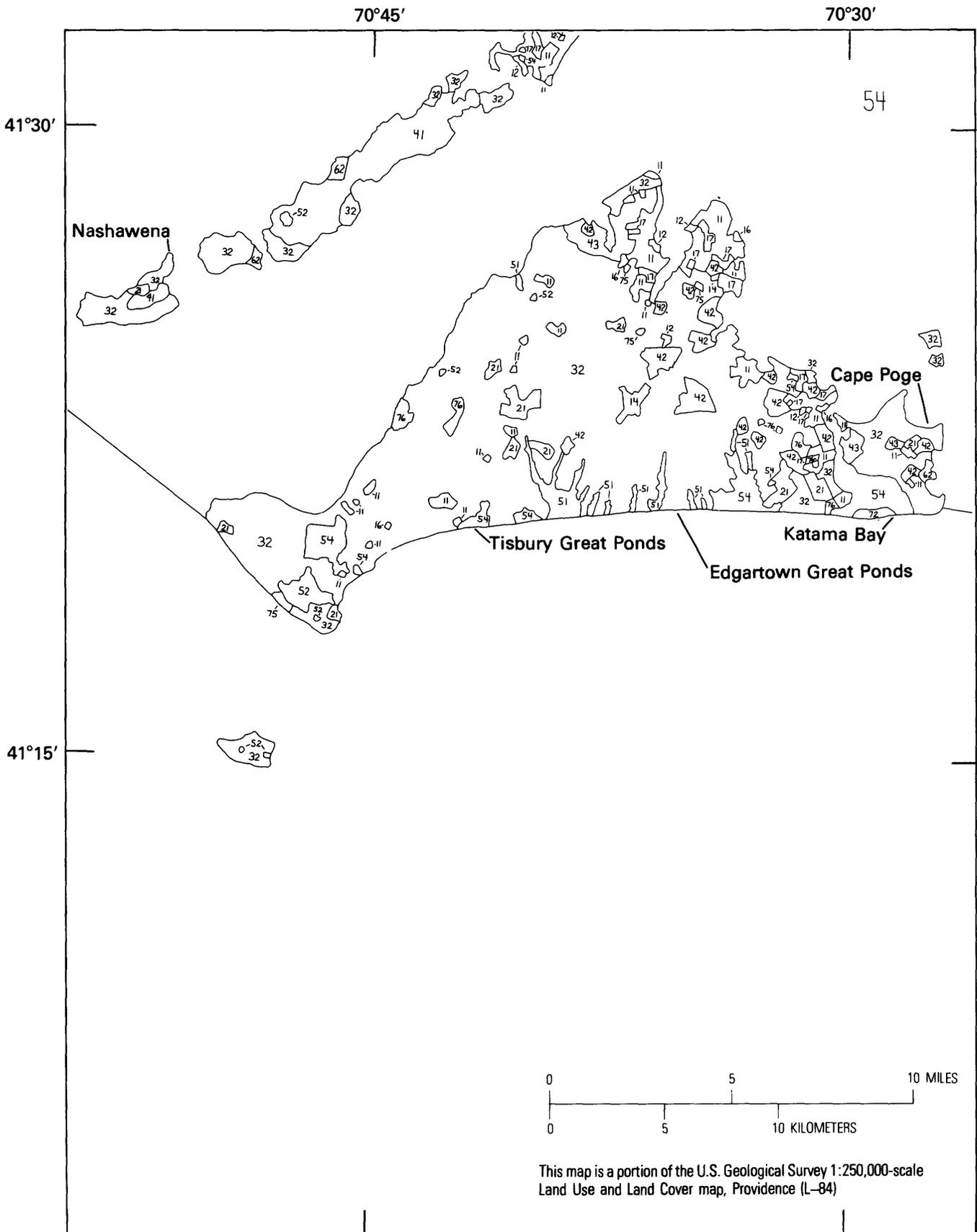


FIGURE 16. – Land use and land cover map of the coastal area near Martha's Vineyard, Mass., with associated barrier islands.

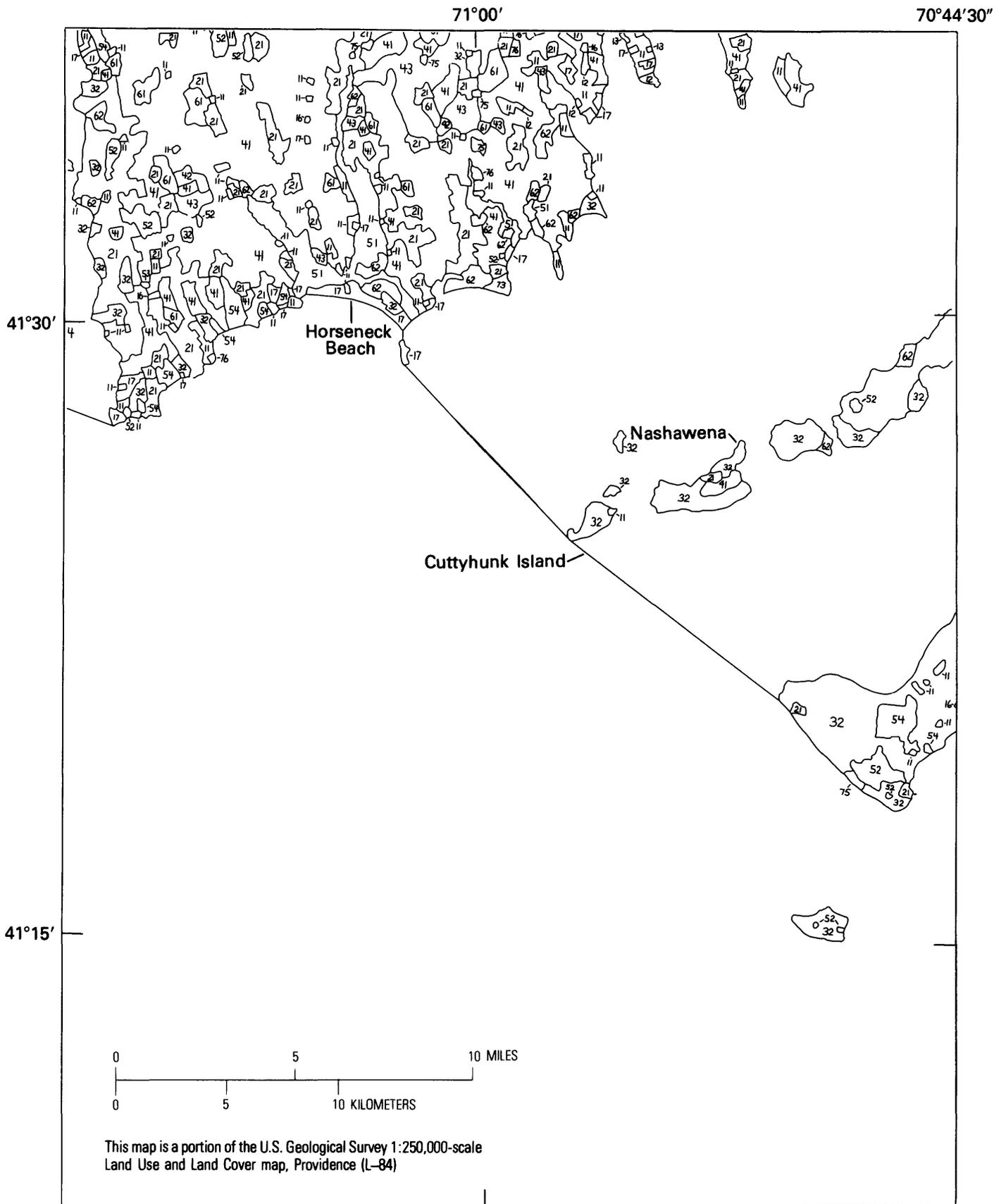


FIGURE 17. - Land use and land cover map of the coastal area near New Bedford, Mass., with associated barrier islands.



FIGURE 18.— Land use and land cover map of the coastal area near Newport, R.I., with associated barrier islands.

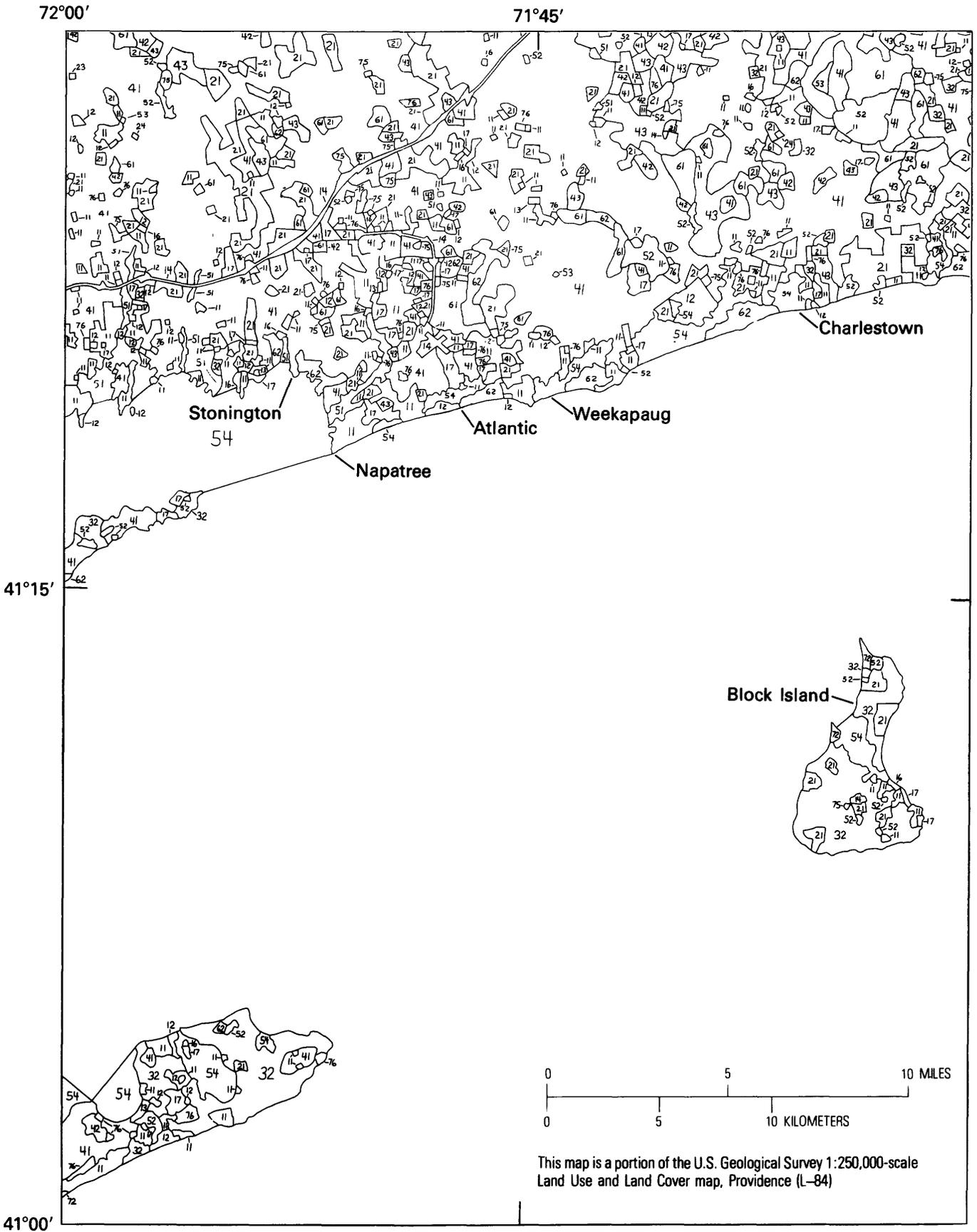


FIGURE 19. - Land use and land cover map of the coastal area near Mystic, Conn., with associated barrier islands.

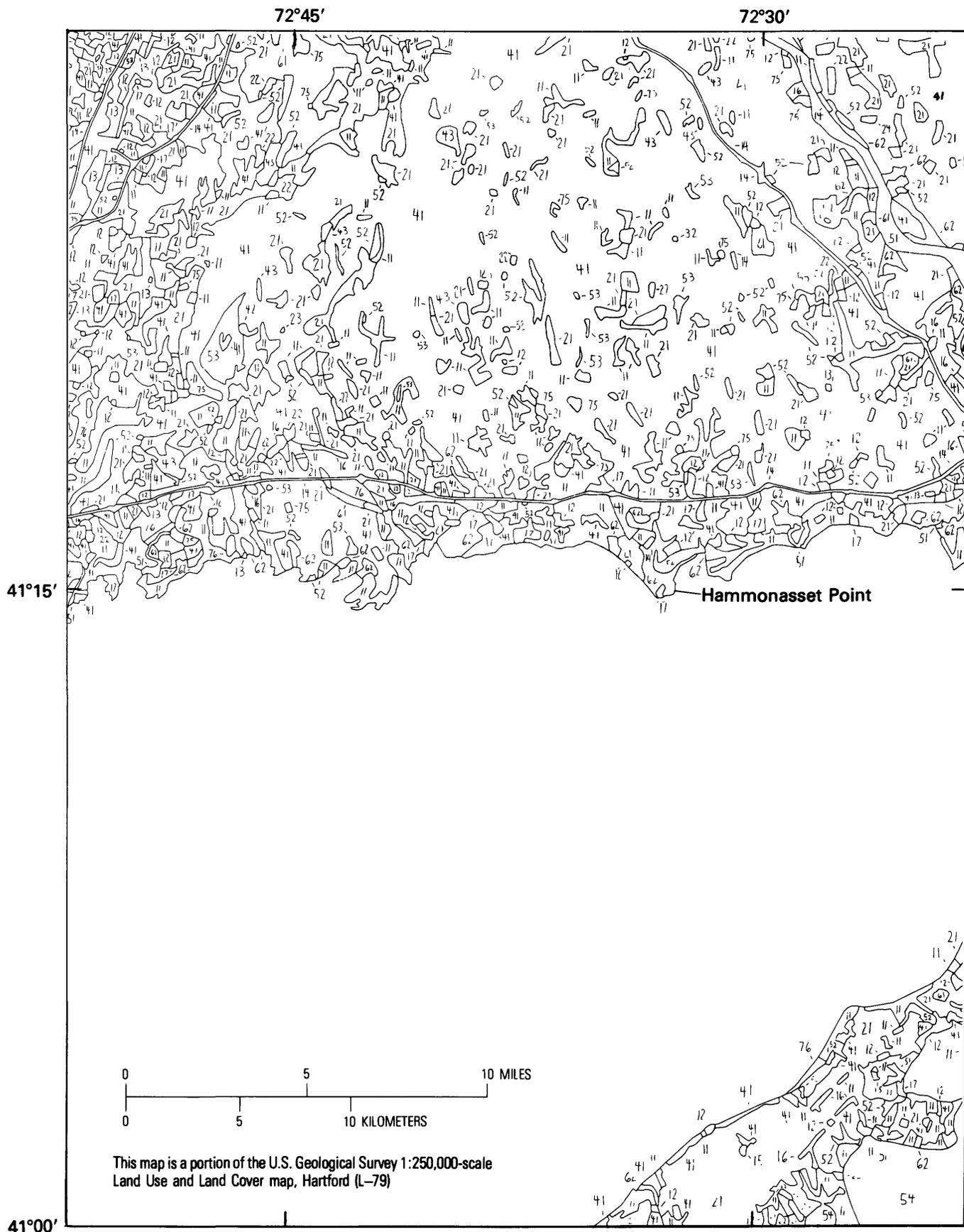


FIGURE 20.— Land use and land cover map of the coastal area near New Haven, Conn., with associated barrier islands.

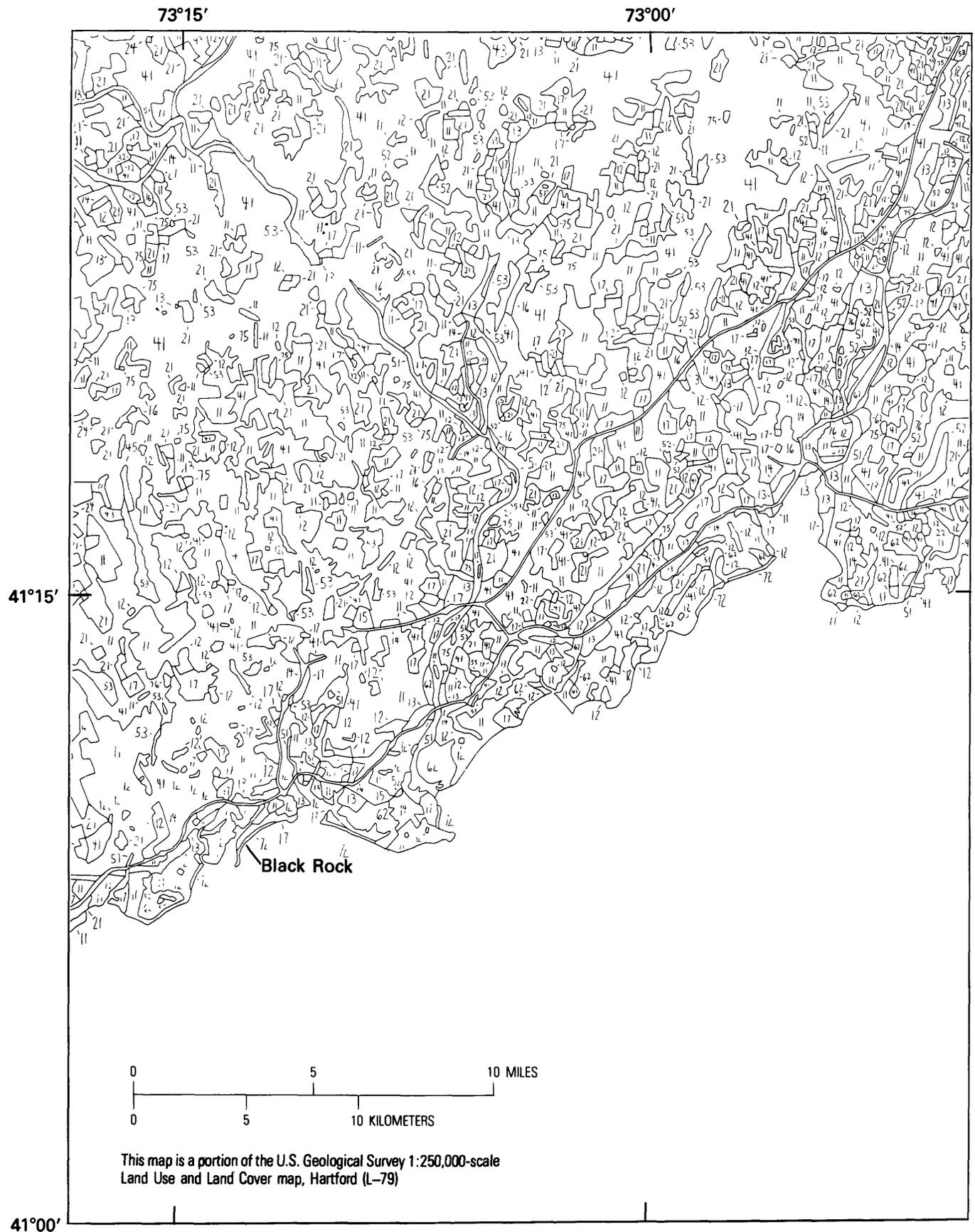
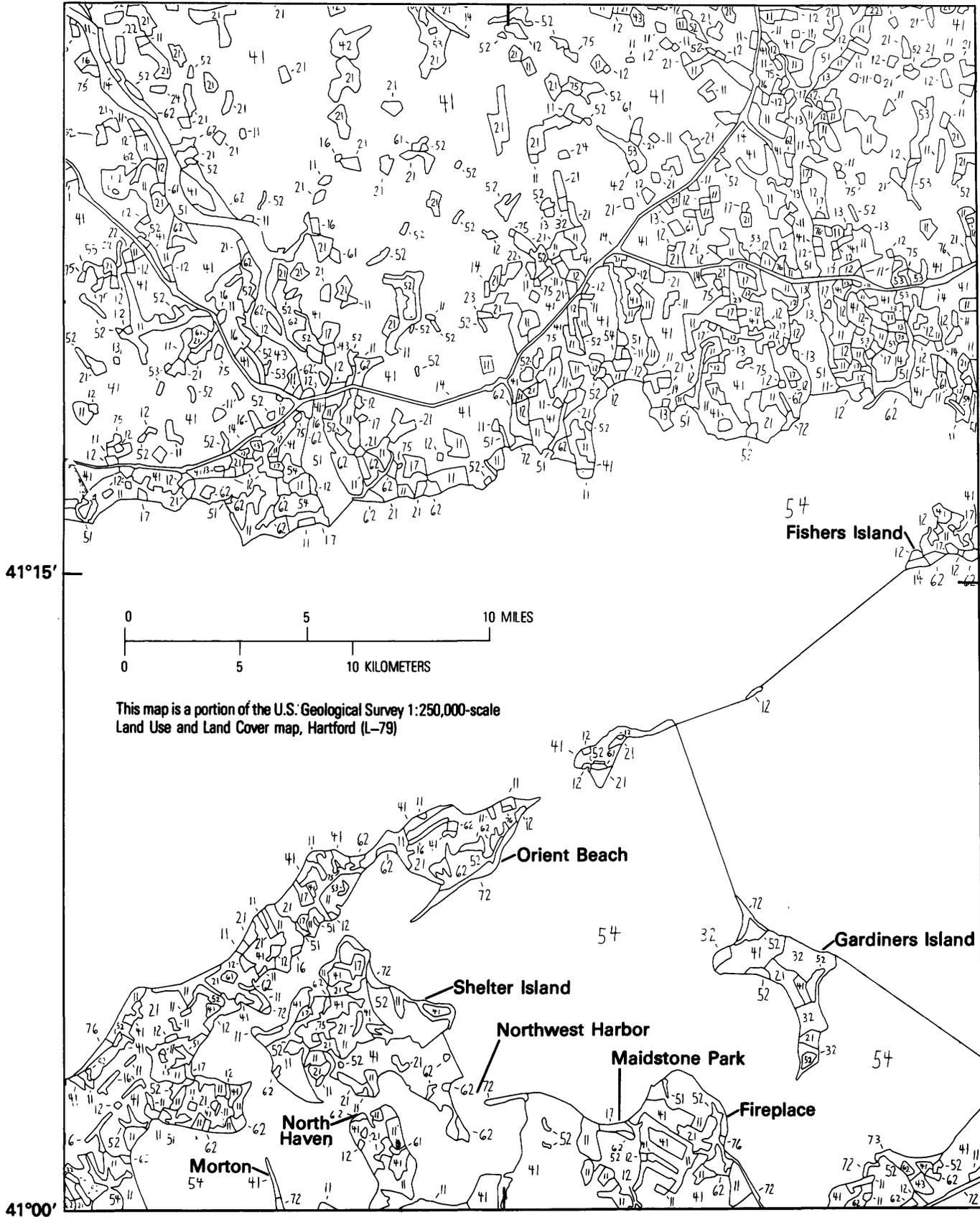


FIGURE 21. - Land use and land cover map of the coastal area near Bridgeport, Conn., with associated barrier islands.

72°15'

72°00'



This map is a portion of the U.S. Geological Survey 1:250,000-scale Land Use and Land Cover map, Hartford (L-79)

FIGURE 22. - Land use and land cover map of the coastal area near New London, Conn., with associated barrier islands.



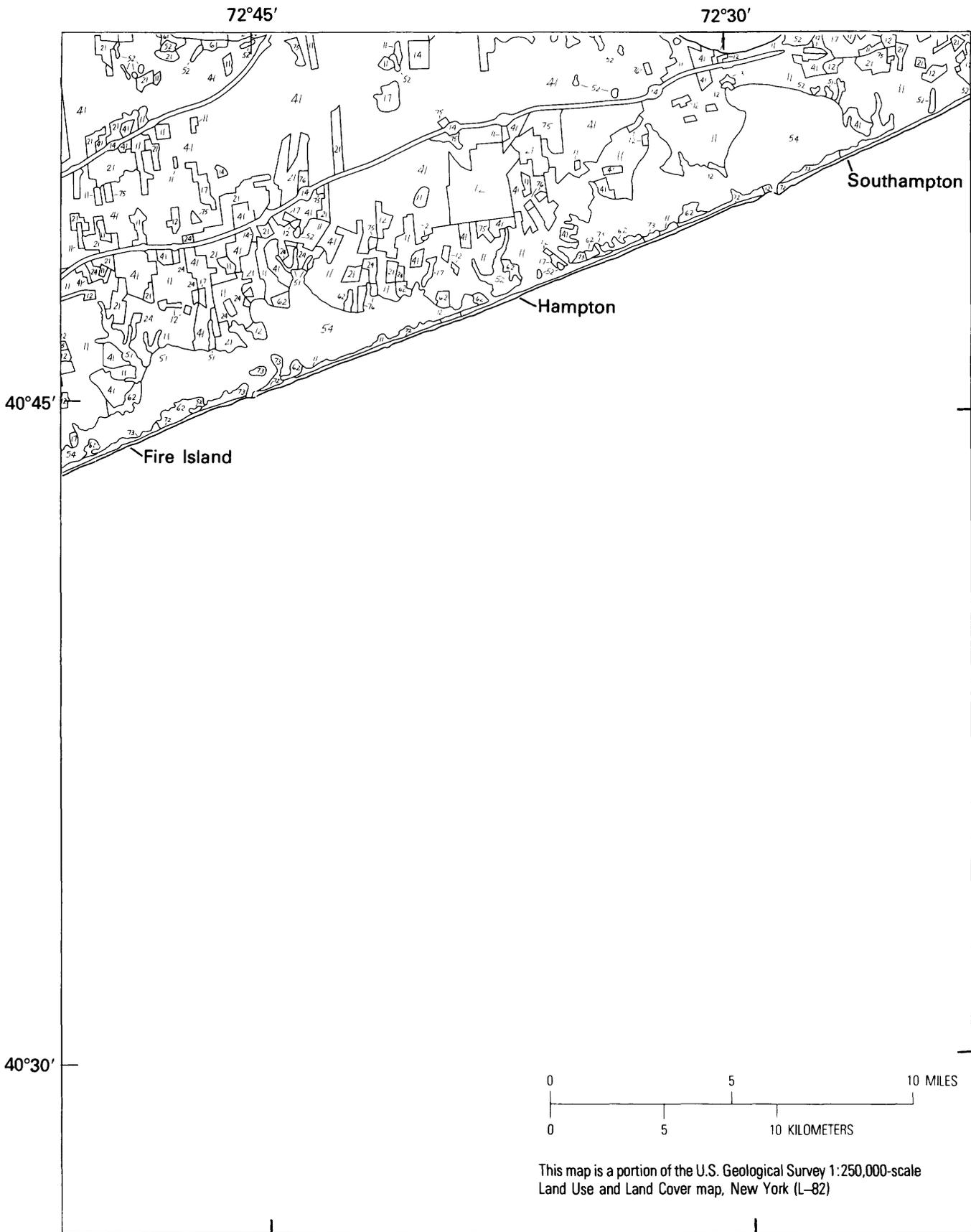


FIGURE 24. - Land use and land cover map of the coastal area near Brookhaven, N.Y., with associated barrier islands.

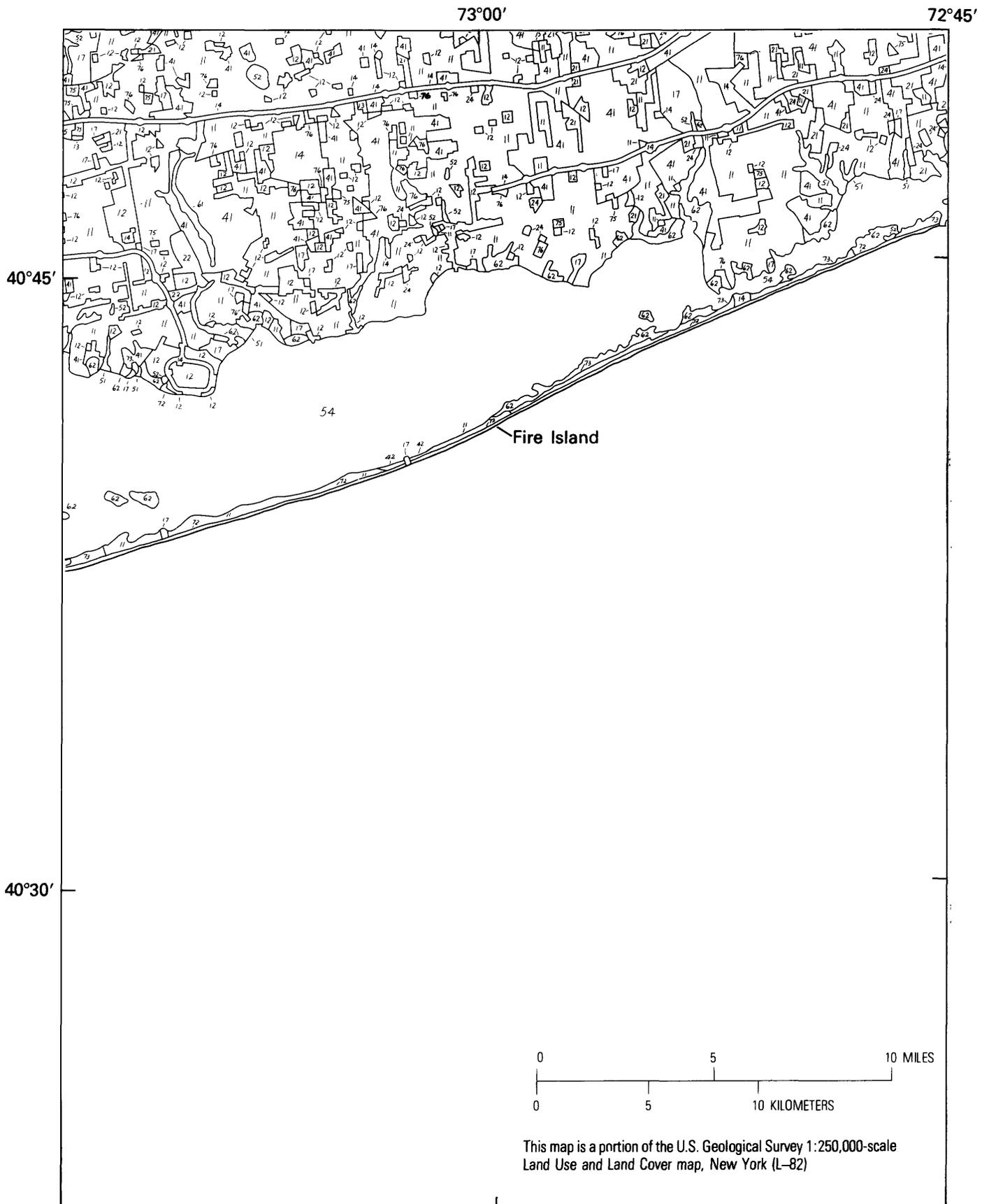


FIGURE 25.—Land use and land cover map of the coastal area near Fire Island, N.Y., with associated barrier islands.

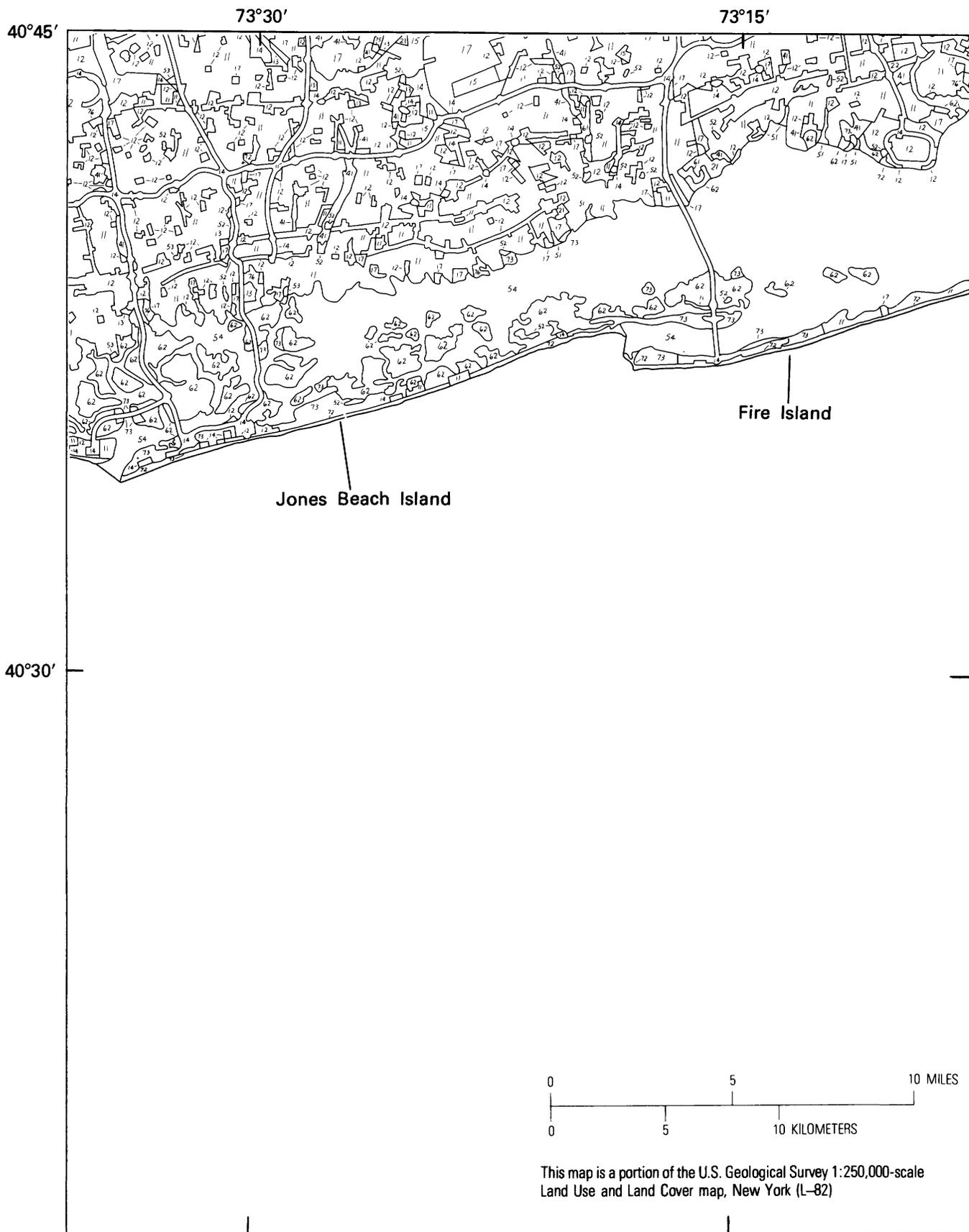


FIGURE 26. – Land use and land cover map of the coastal area near Lindenhurst, N.Y., with associated barrier islands.

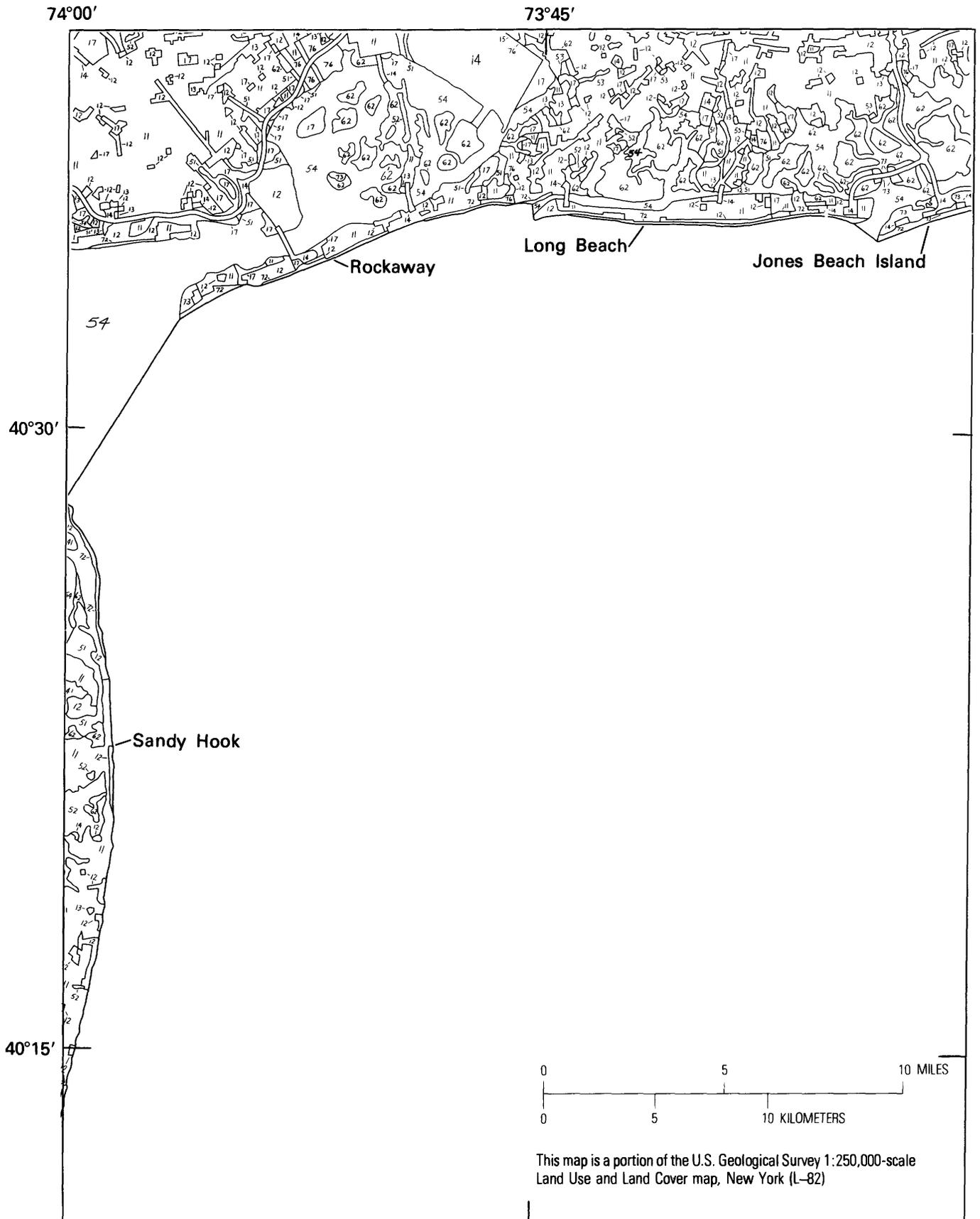


FIGURE 27.—Land use and land cover map of the coastal area near New York, N.Y., with associated barrier islands.

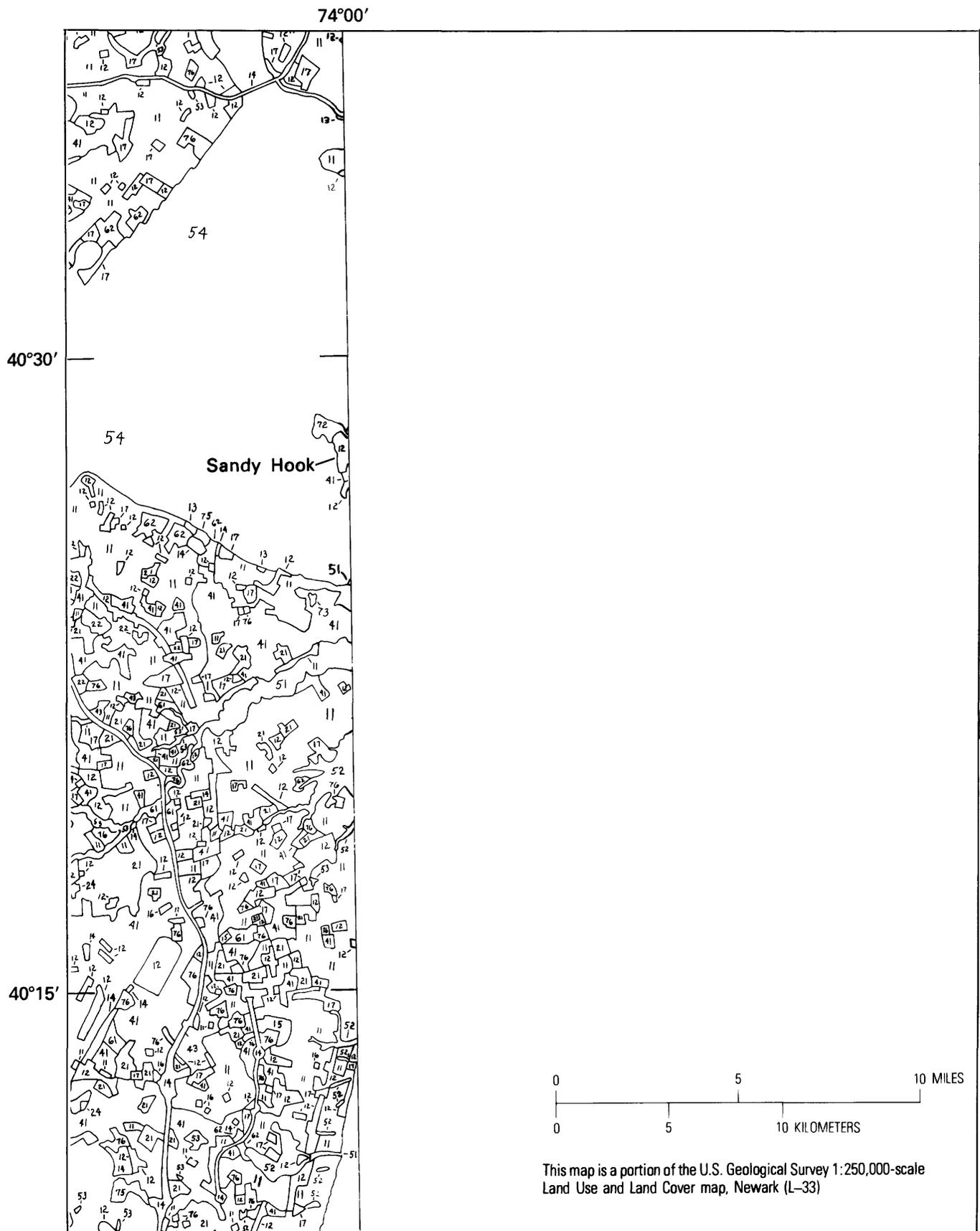


FIGURE 28. - Land use and land cover map of the coastal area near Sandy Hook, N.J., with associated barrier islands.

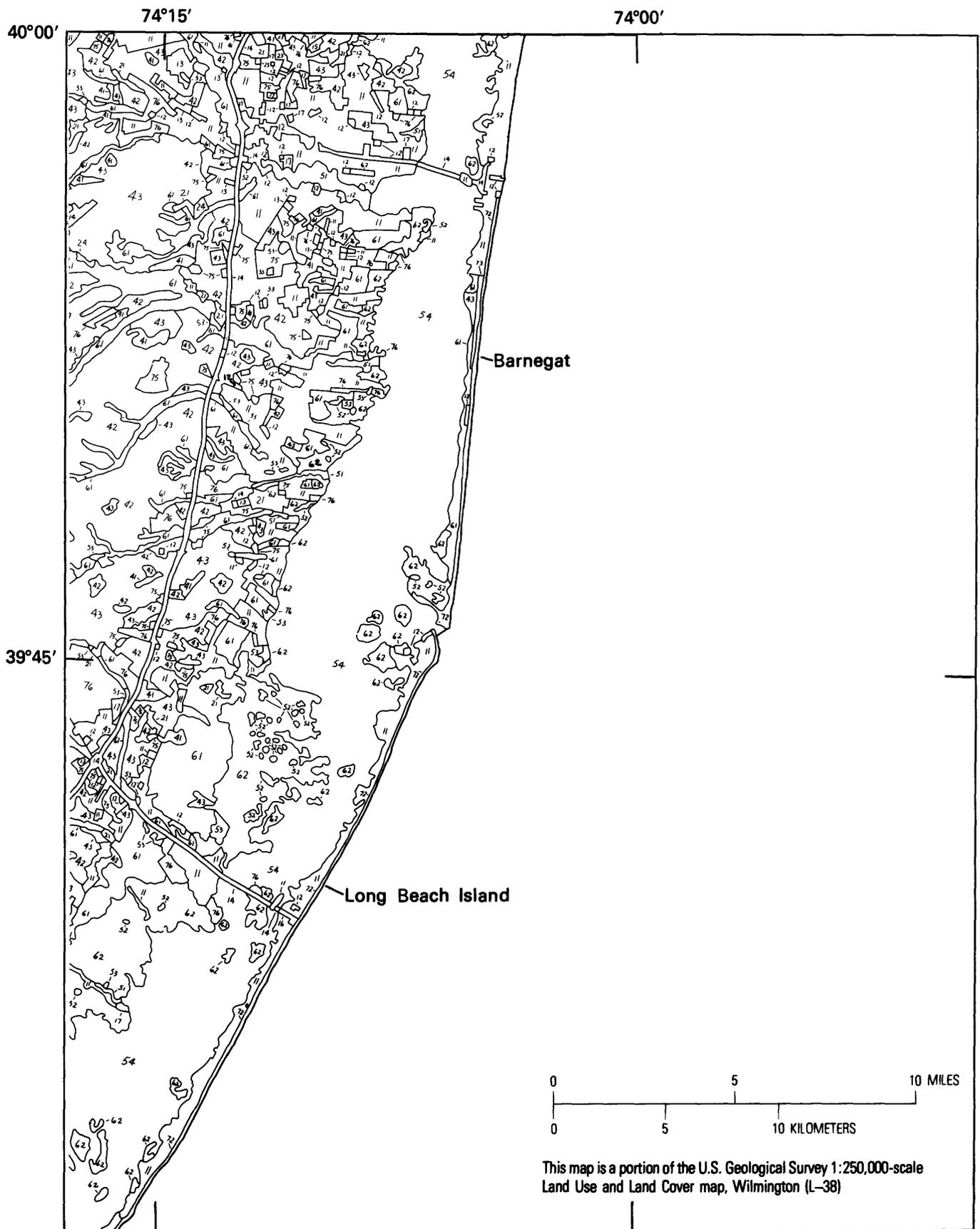


FIGURE 29. - Land use and land cover map of the coastal area near Toms River, N.J., with associated barrier islands.

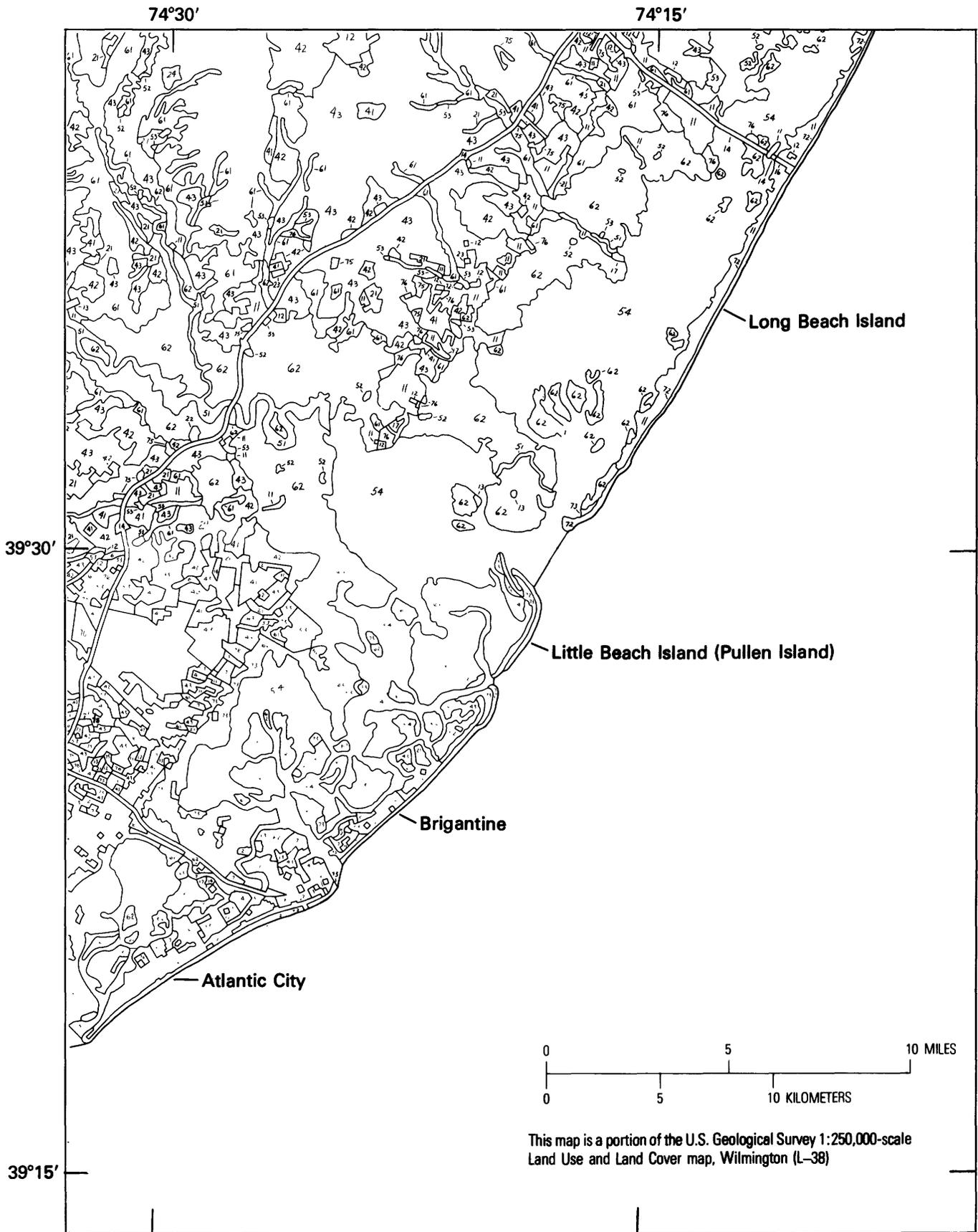


FIGURE 30. - Land use and land cover map of the coastal area near Atlantic City, N.J., with associated barrier islands.

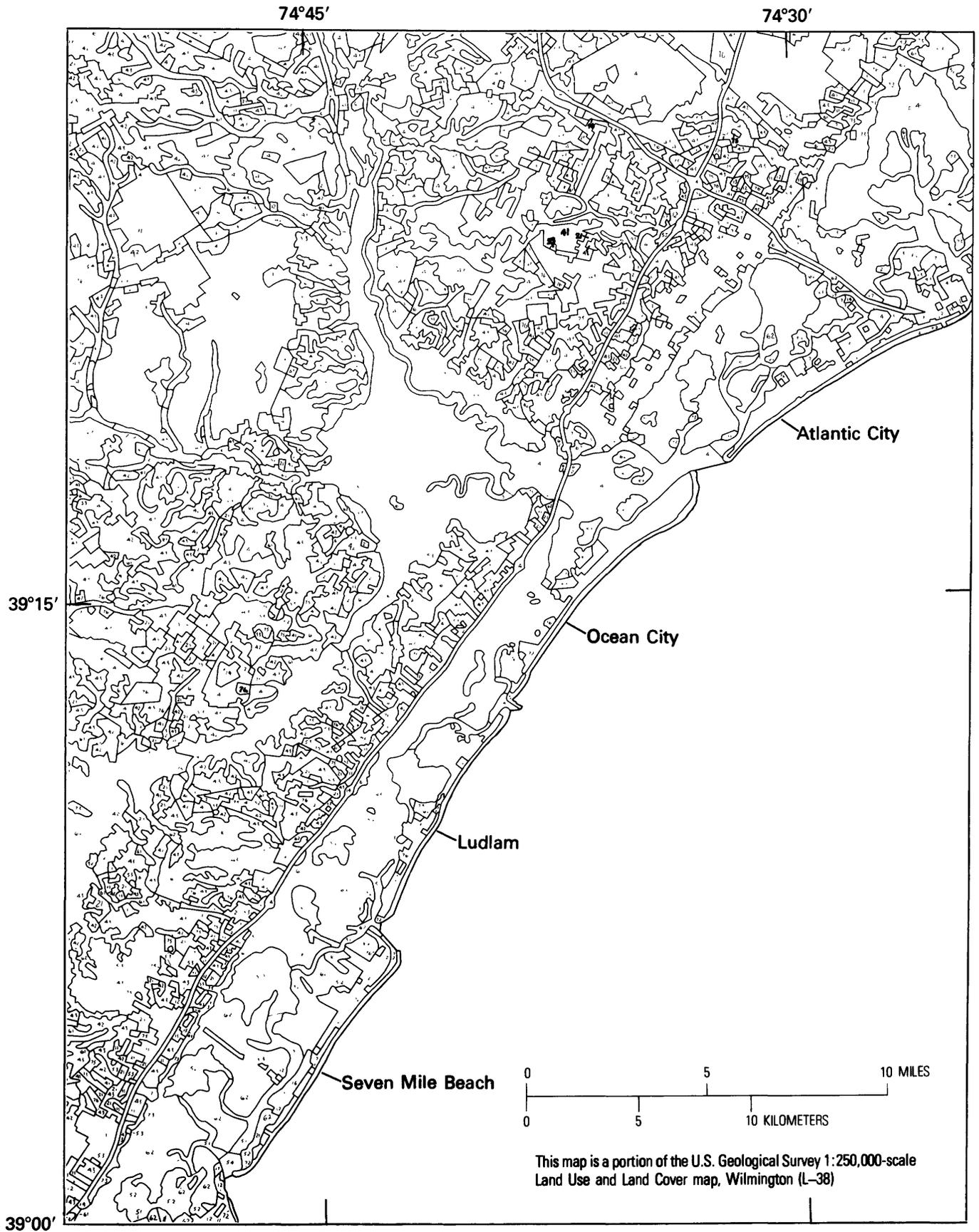


FIGURE 31. - Land use and land cover map of the coastal area near Ocean City, N.J., with associated barrier islands.



FIGURE 32. - Land use and land cover map of the coastal area near Rehoboth Beach, Del., with associated barrier islands.

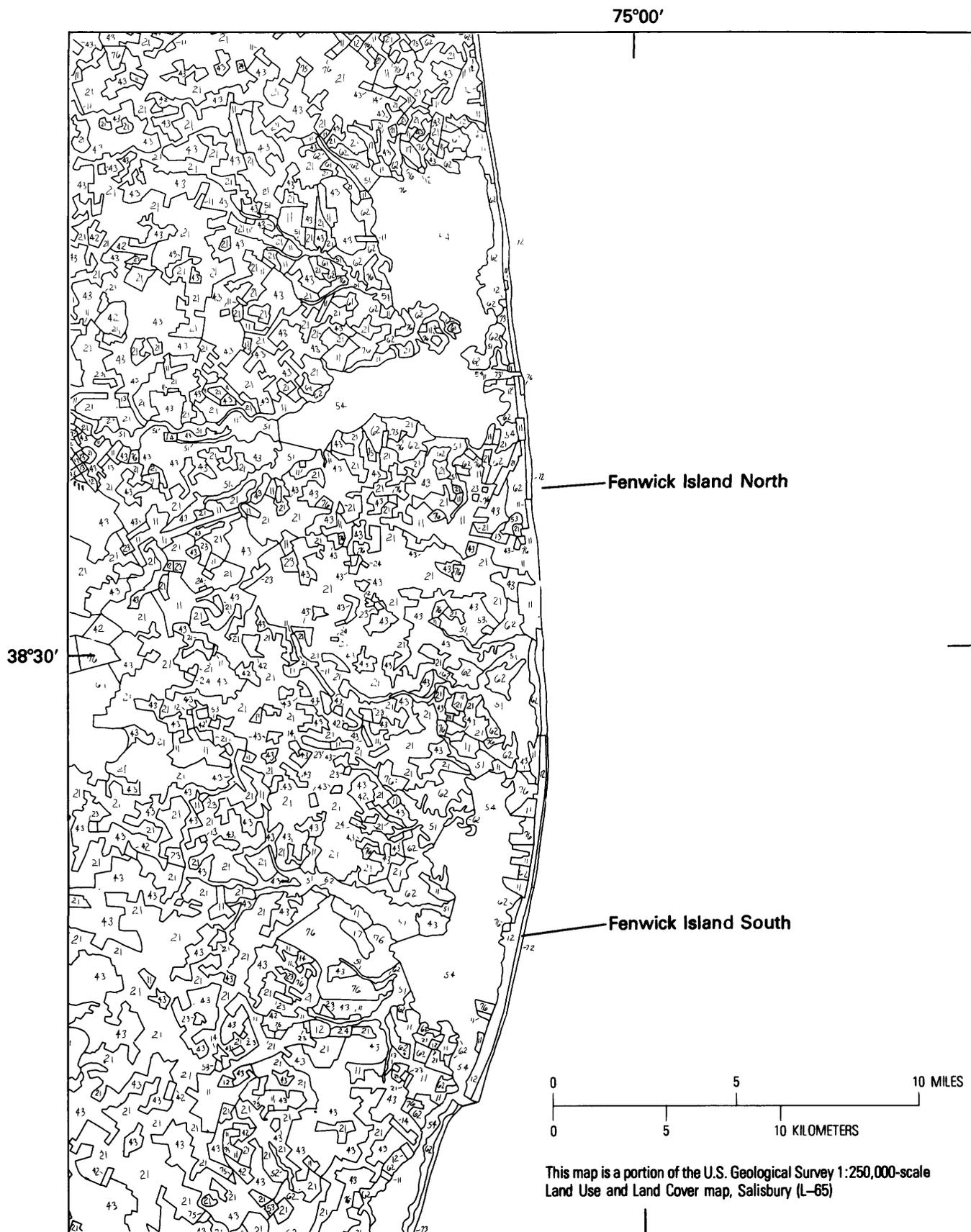


FIGURE 33. - Land use and land cover map of the coastal area near Ocean City, Md., with associated barrier islands.

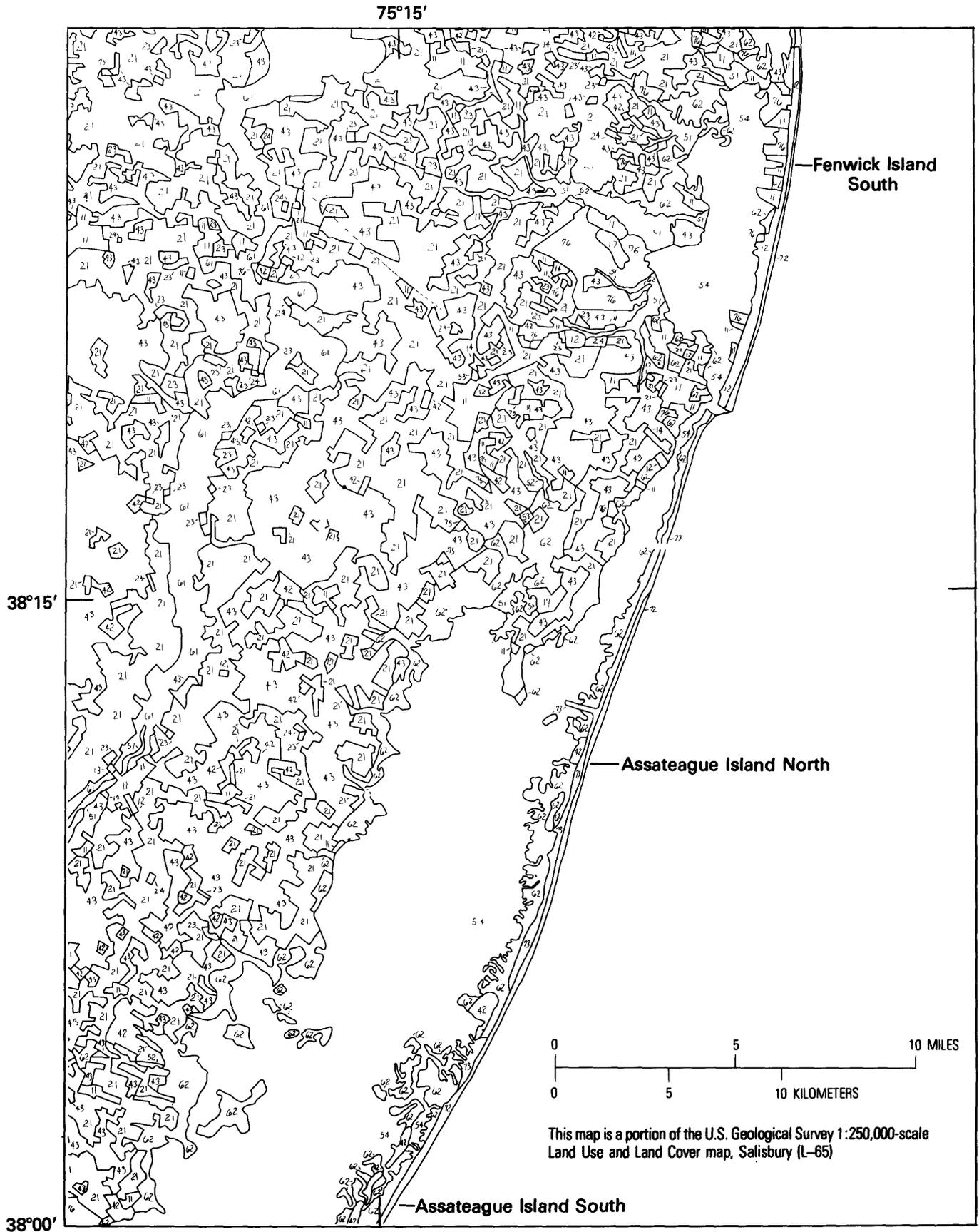


FIGURE 34.—Land use and land cover map of the coastal area near Assateague Island, Md., with associated barrier islands.

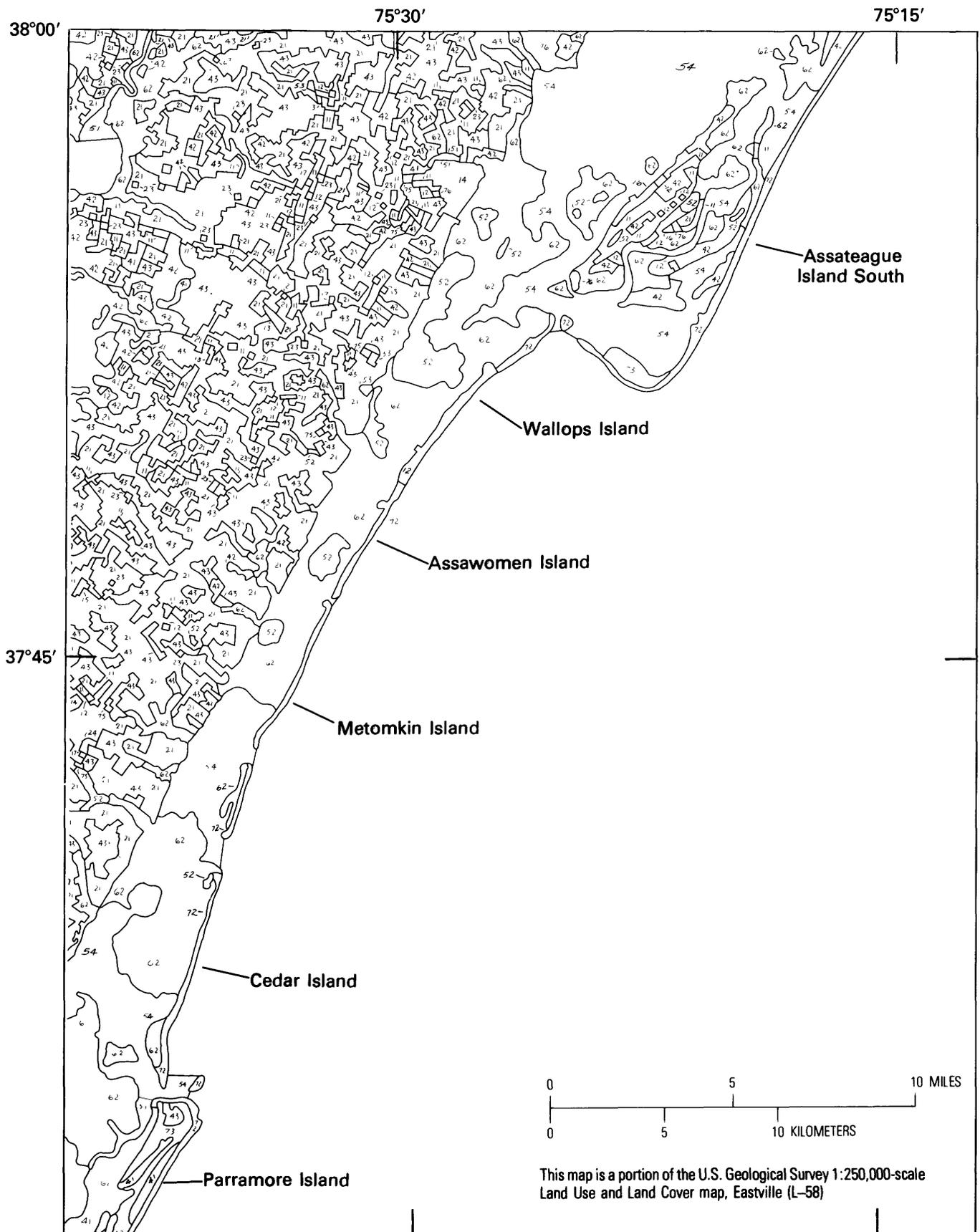


FIGURE 35. - Land use and land cover map of the coastal area near Chincoteague, Va., with associated barrier islands.

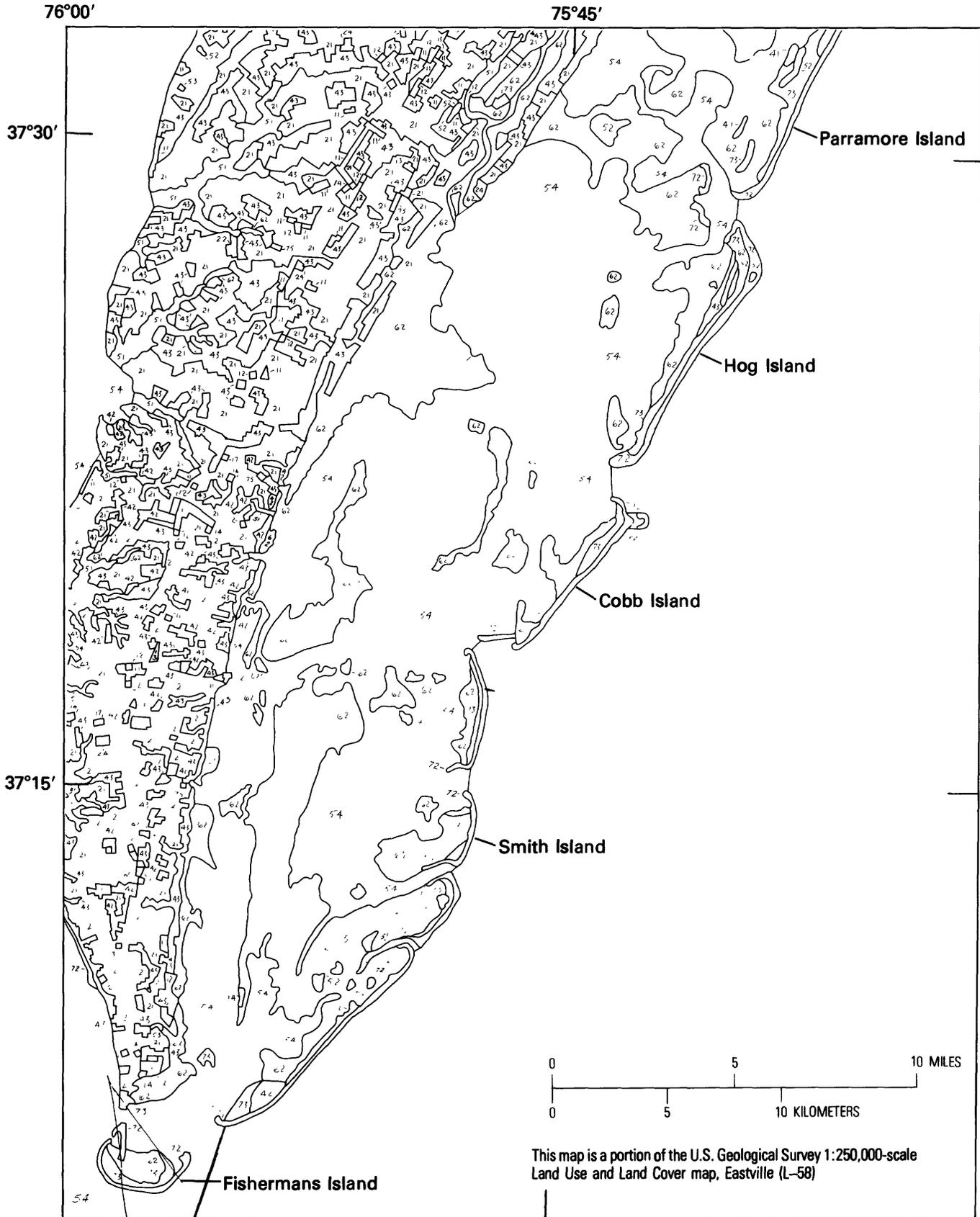


FIGURE 36. - Land use and land cover map of the coastal area near Cape Charles, Va., with associated barrier islands.

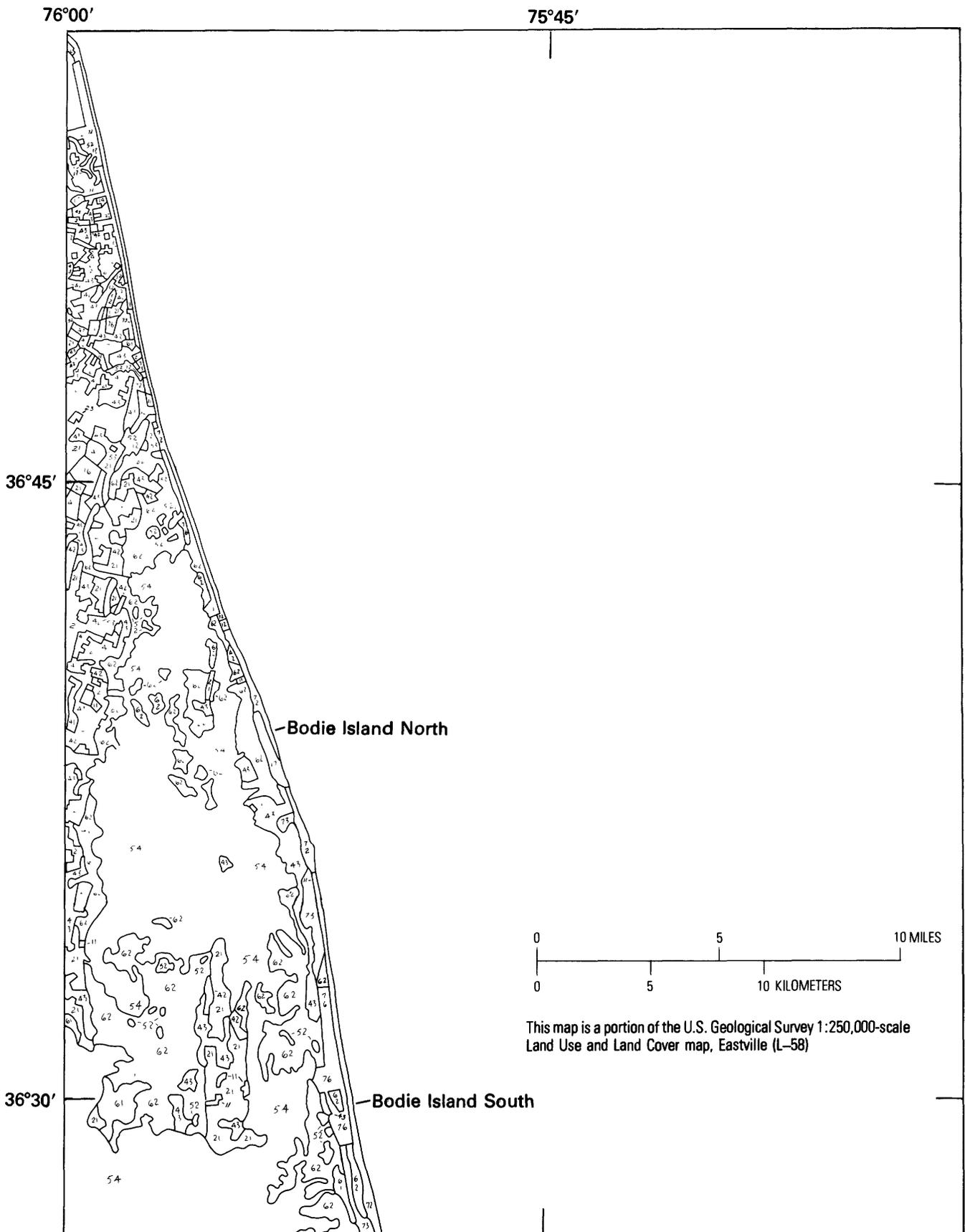


FIGURE 37. - Land use and land cover map of the coastal area near Virginia Beach, Va., with associated barrier islands.

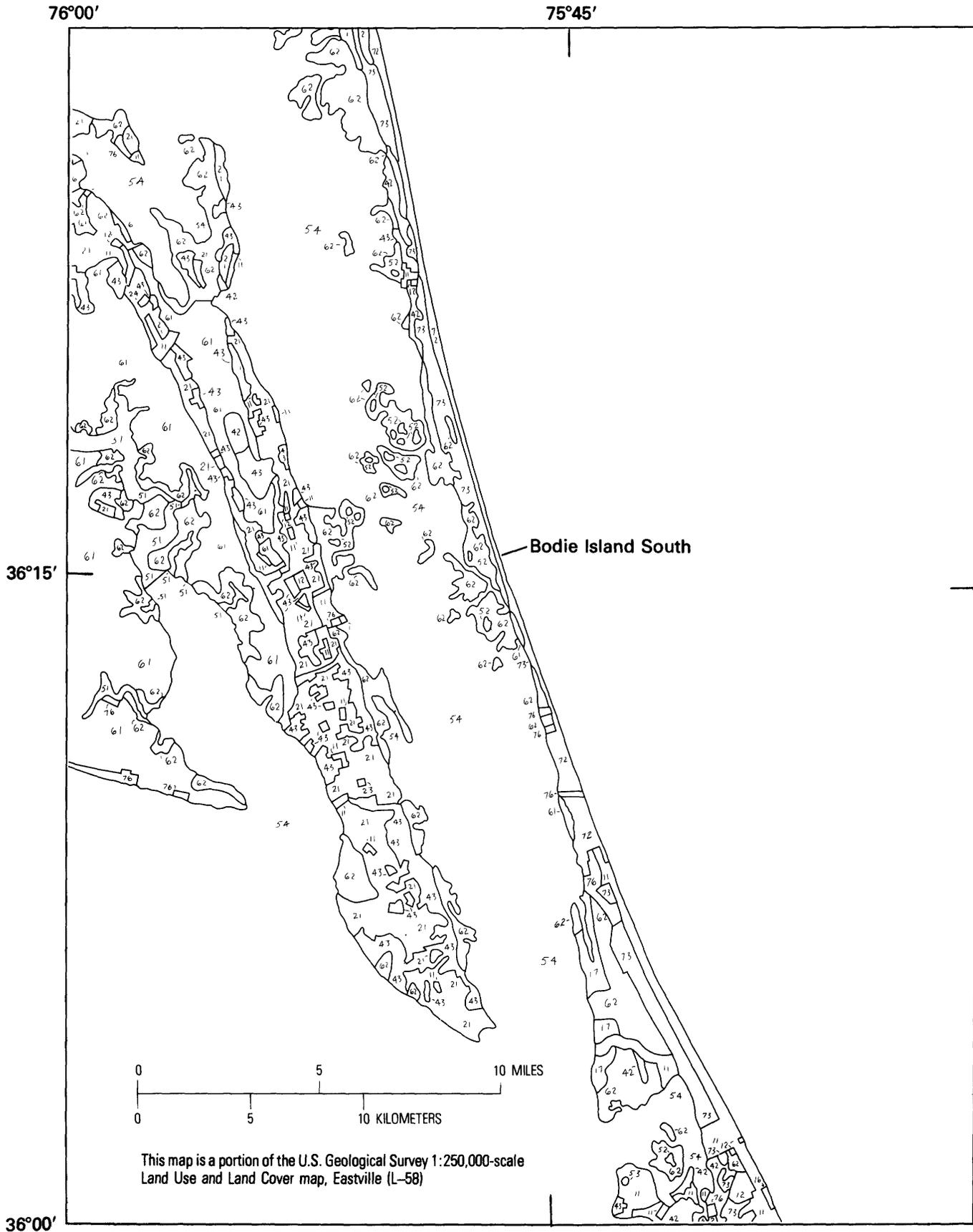


FIGURE 38. - Land use and land cover map of the coastal area near Kitty Hawk, N.C., with associated barrier islands.

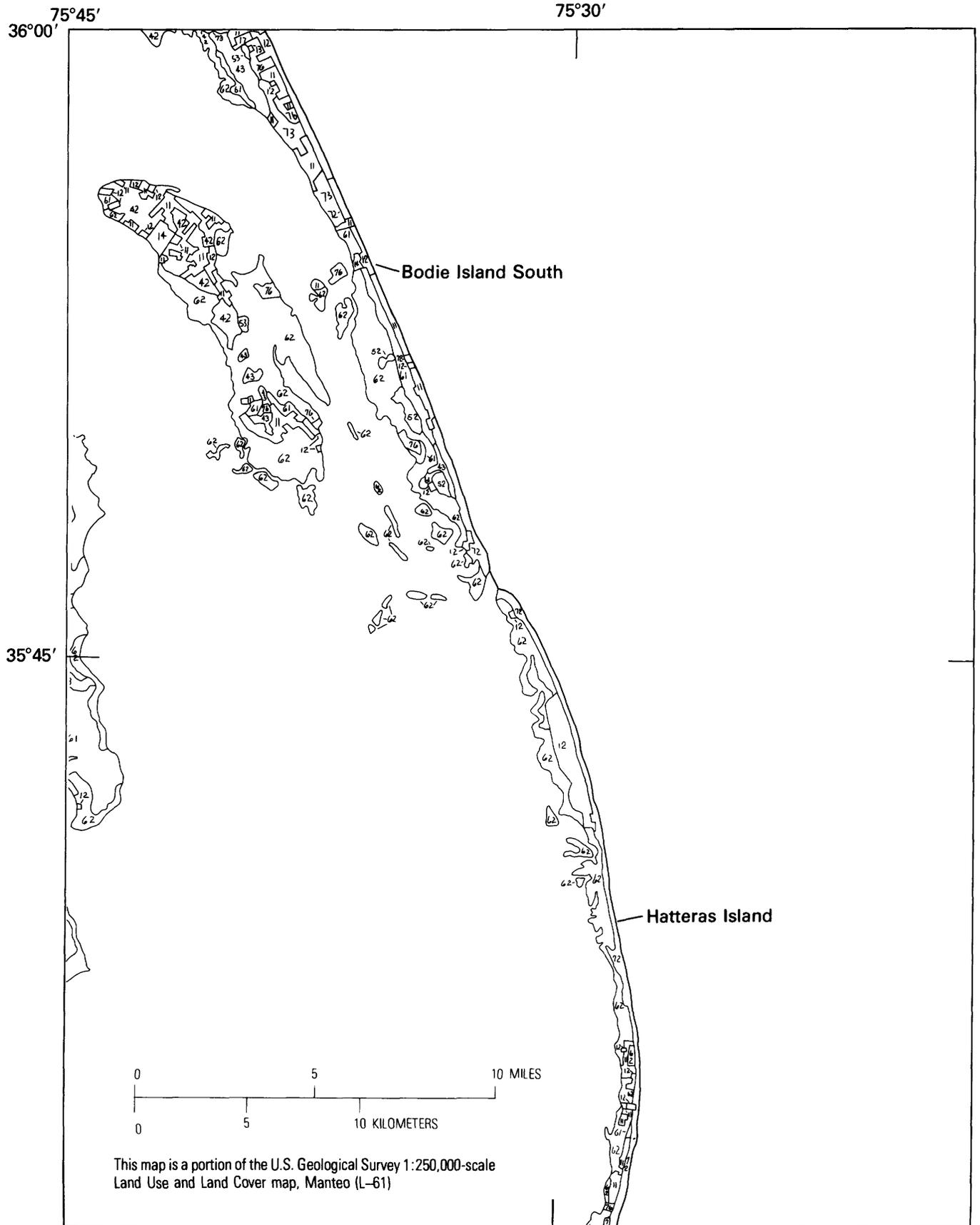


FIGURE 39.—Land use and land cover map of the coastal area near Nags Head, N.C., with associated barrier islands.

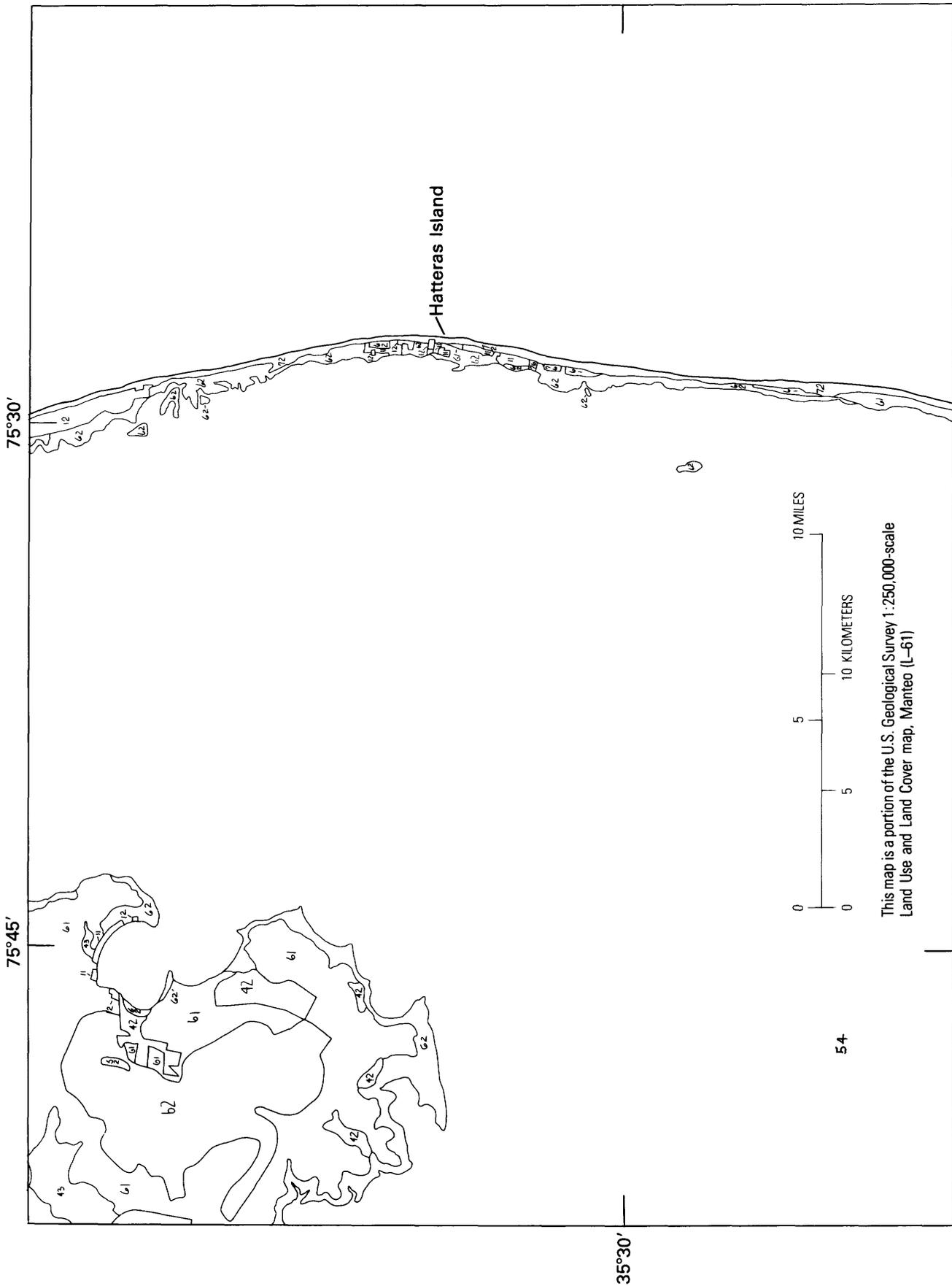


FIGURE 40. — Land use and land cover map of the coastal area near Waves, N.C., with associated barrier islands.



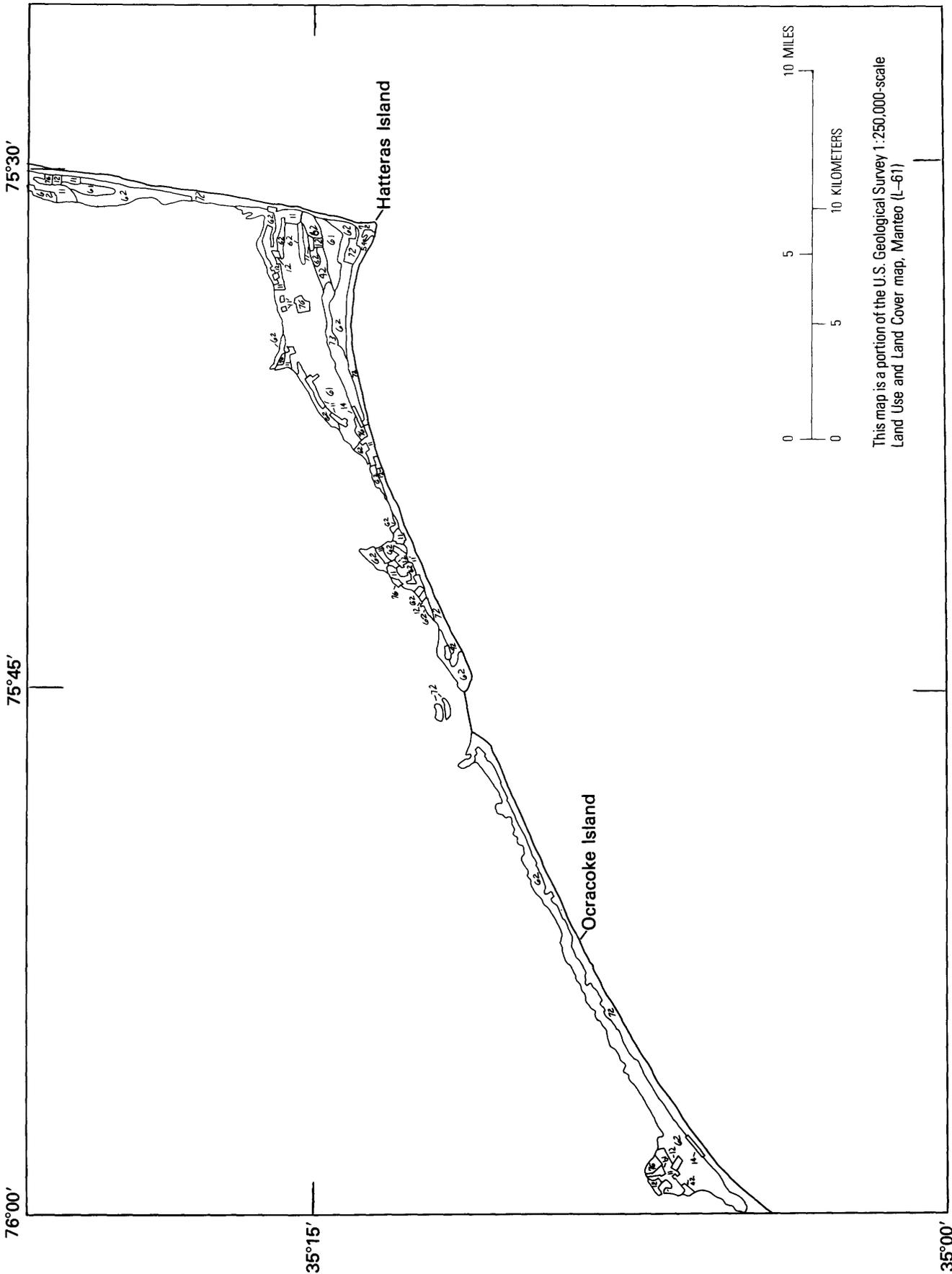


FIGURE 42. -- Land use and land cover map of the coastal area near Ocracoke, N.C., with associated barrier islands.

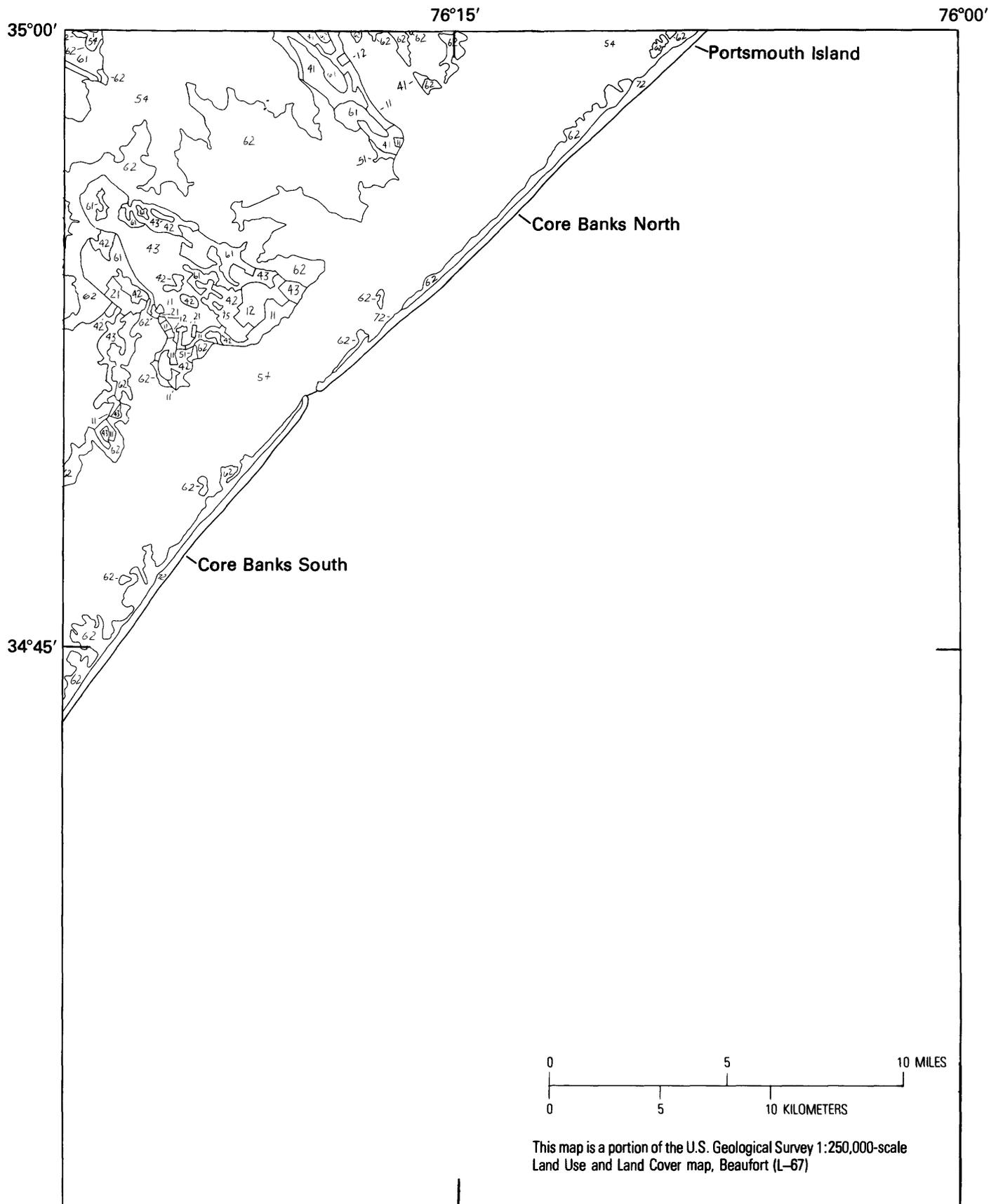


FIGURE 43. — Land use and land cover map of the coastal area near Atlantic, N.C., with associated barrier islands.



FIGURE 44. – Land use and land cover map of the coastal area near Cape Lookout, N.C., with associated barrier islands.

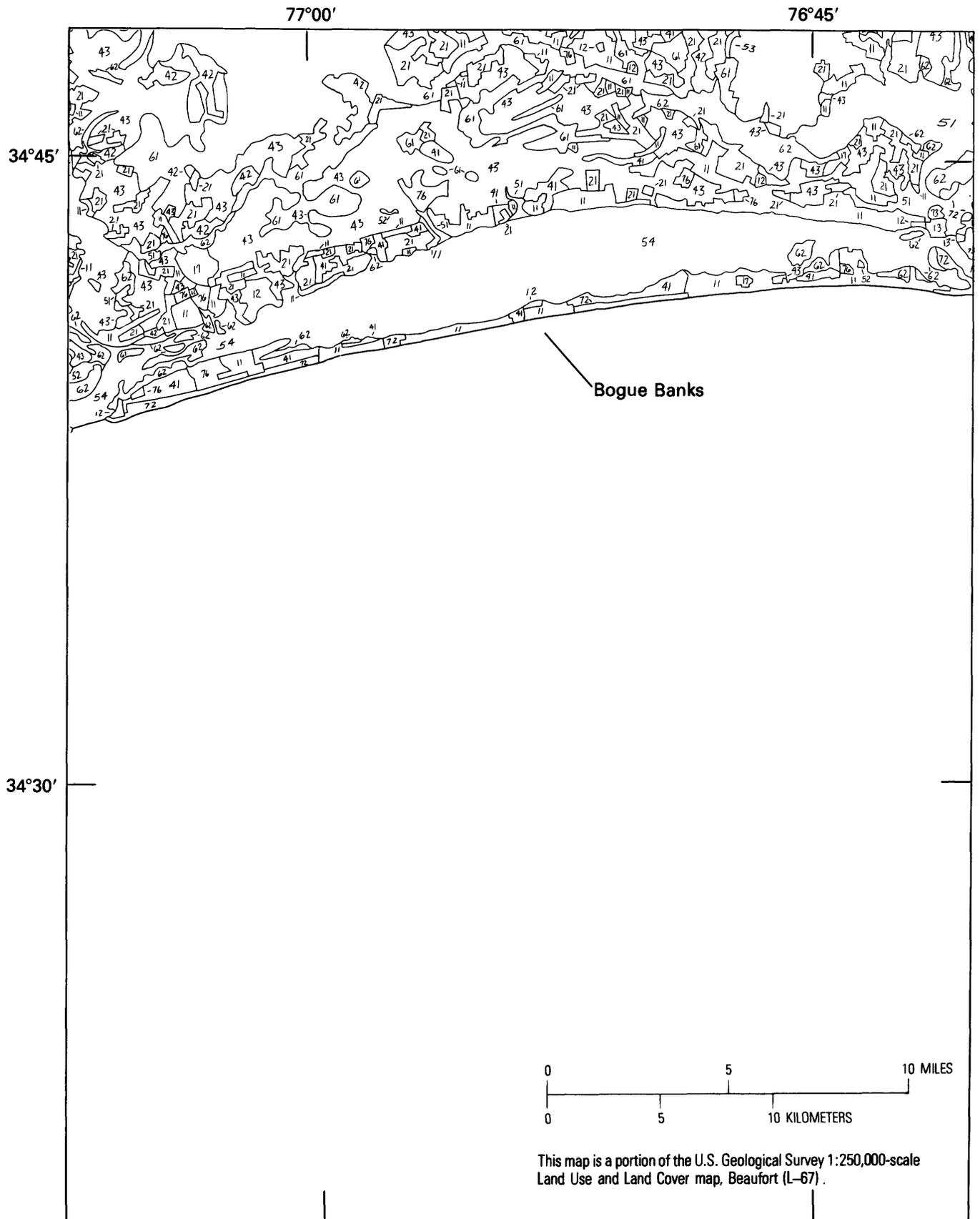


FIGURE 45.—Land use and land cover map of the coastal area near Morehead City, N.C., with associated barrier islands.

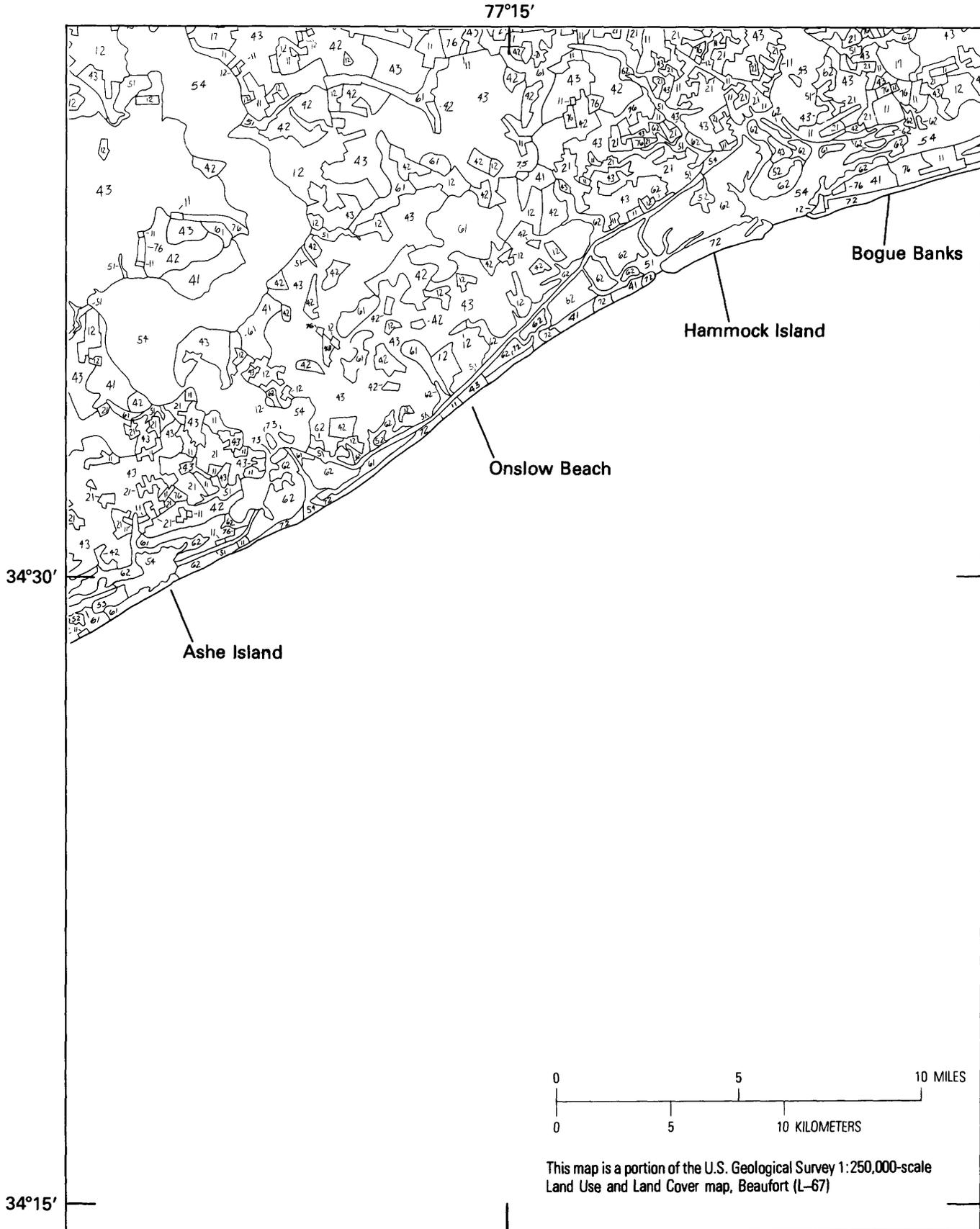


FIGURE 46. - Land use and land cover map of the coastal area near Jacksonville, N.C., with associated barrier islands.

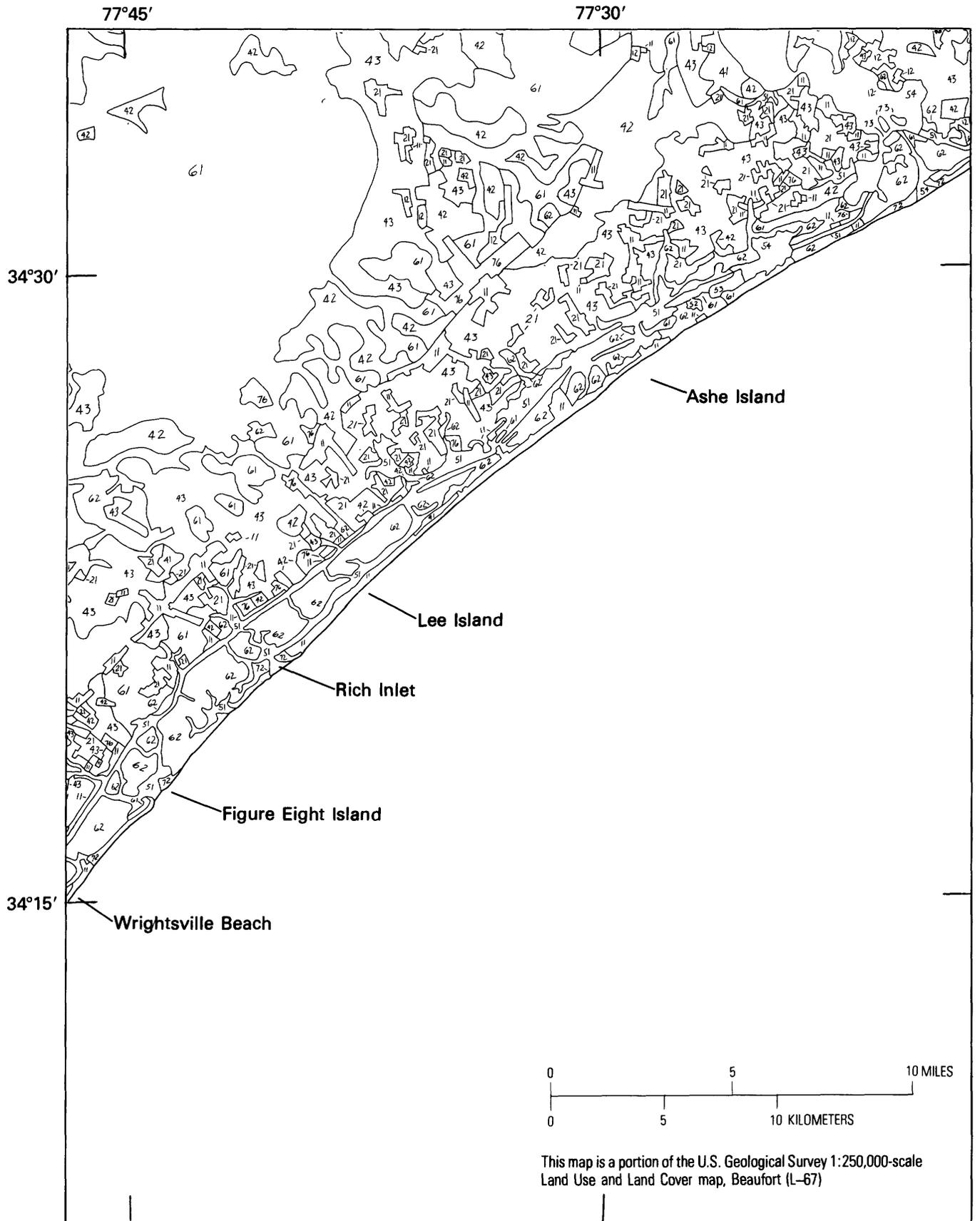


FIGURE 47. - Land use and land cover map of the coastal area near Hampstead, N.C., with associated barrier islands.



FIGURE 48. - Land use and land cover map of the coastal area near Wrightsville Beach, N.C., with associated barrier islands.

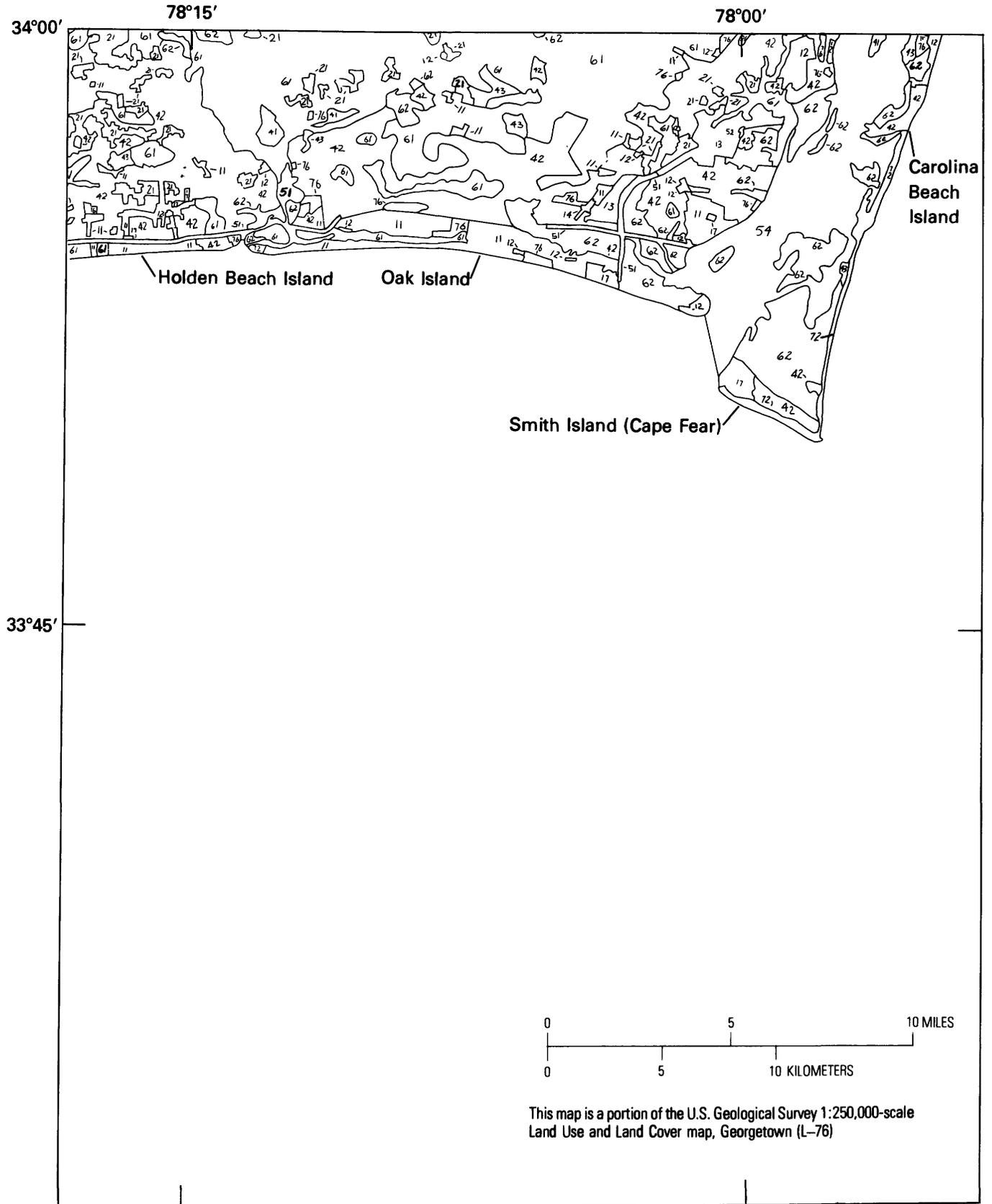


FIGURE 49. - Land use and land cover map of the coastal area near Cape Fear, N.C., with associated barrier islands.

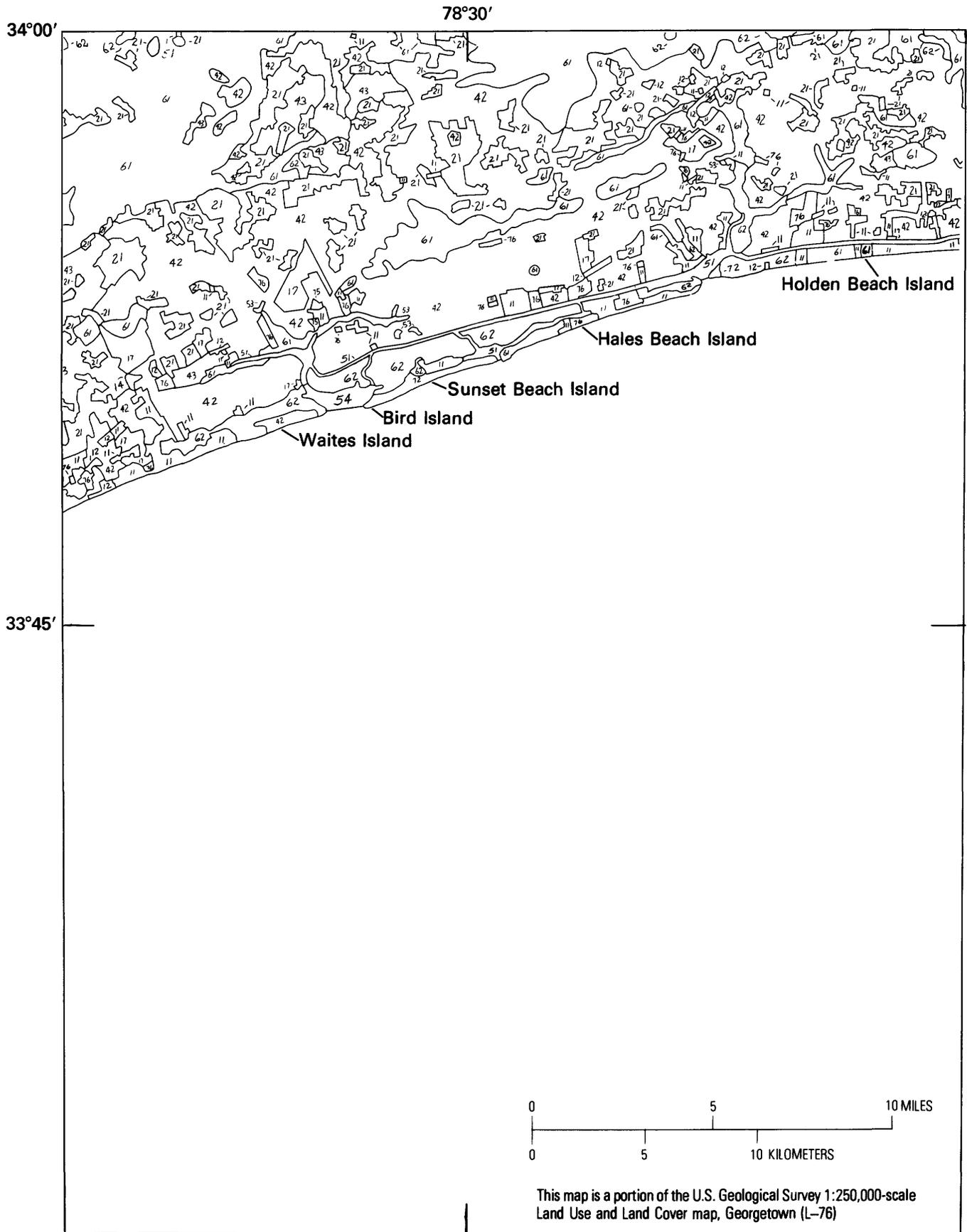


FIGURE 50. — Land use and land cover map of the coastal area near Seaside, N.C., with associated barrier islands.

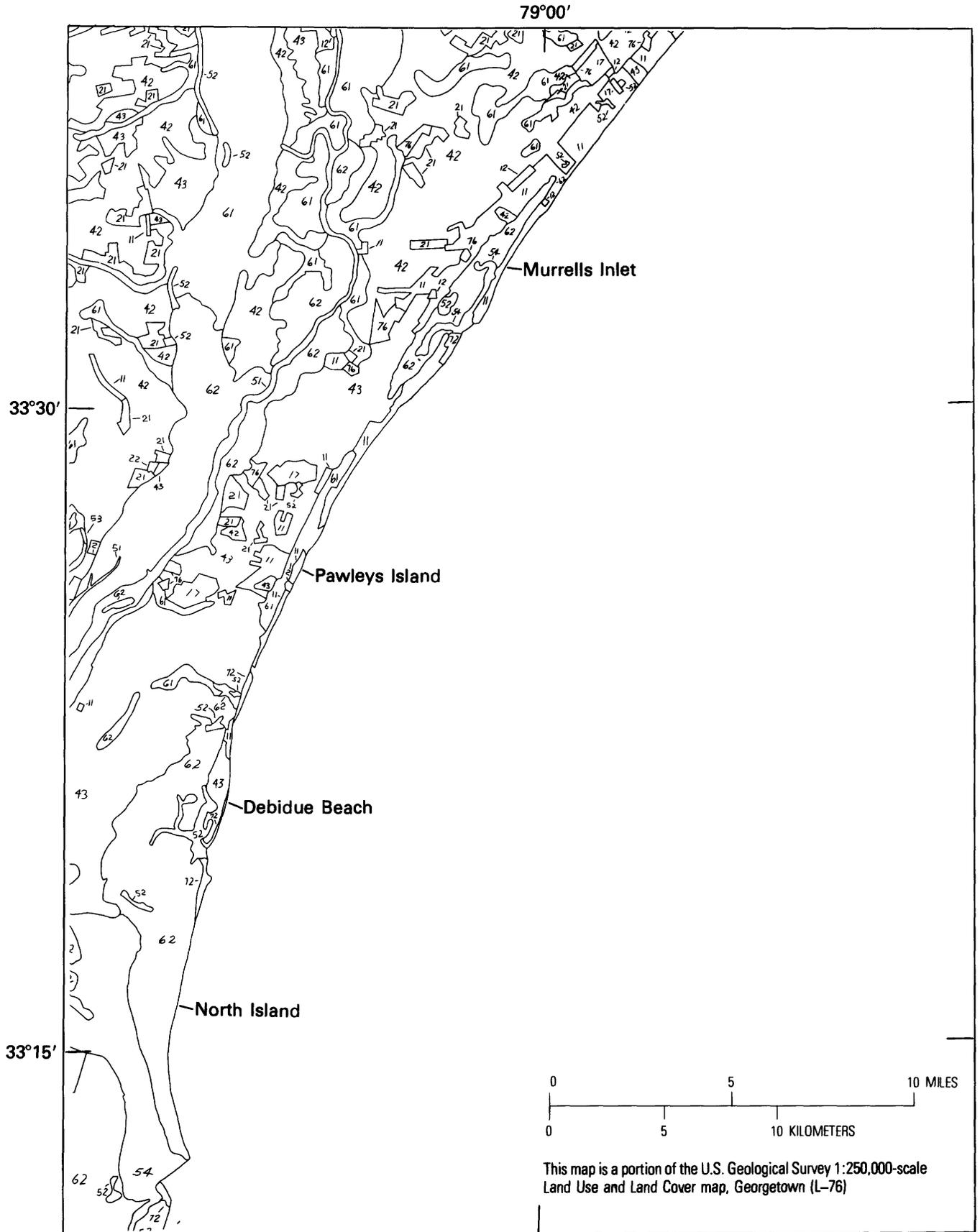


FIGURE 51.—Land use and land cover map of the coastal area near Georgetown, S.C., with associated barrier islands.

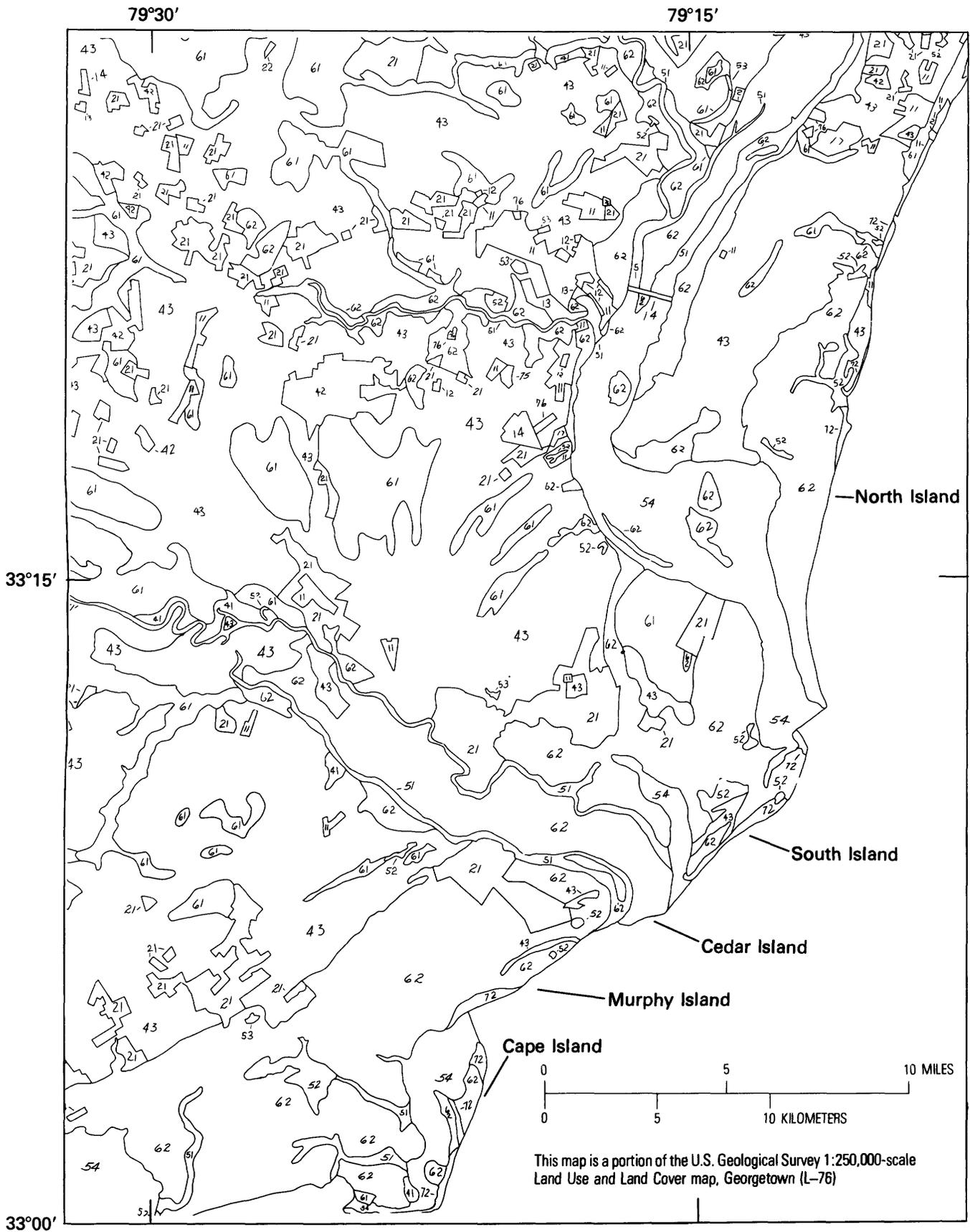


FIGURE 52. - Land use and land cover map of the coastal area near Cape Romain, S.C., with associated barrier islands.

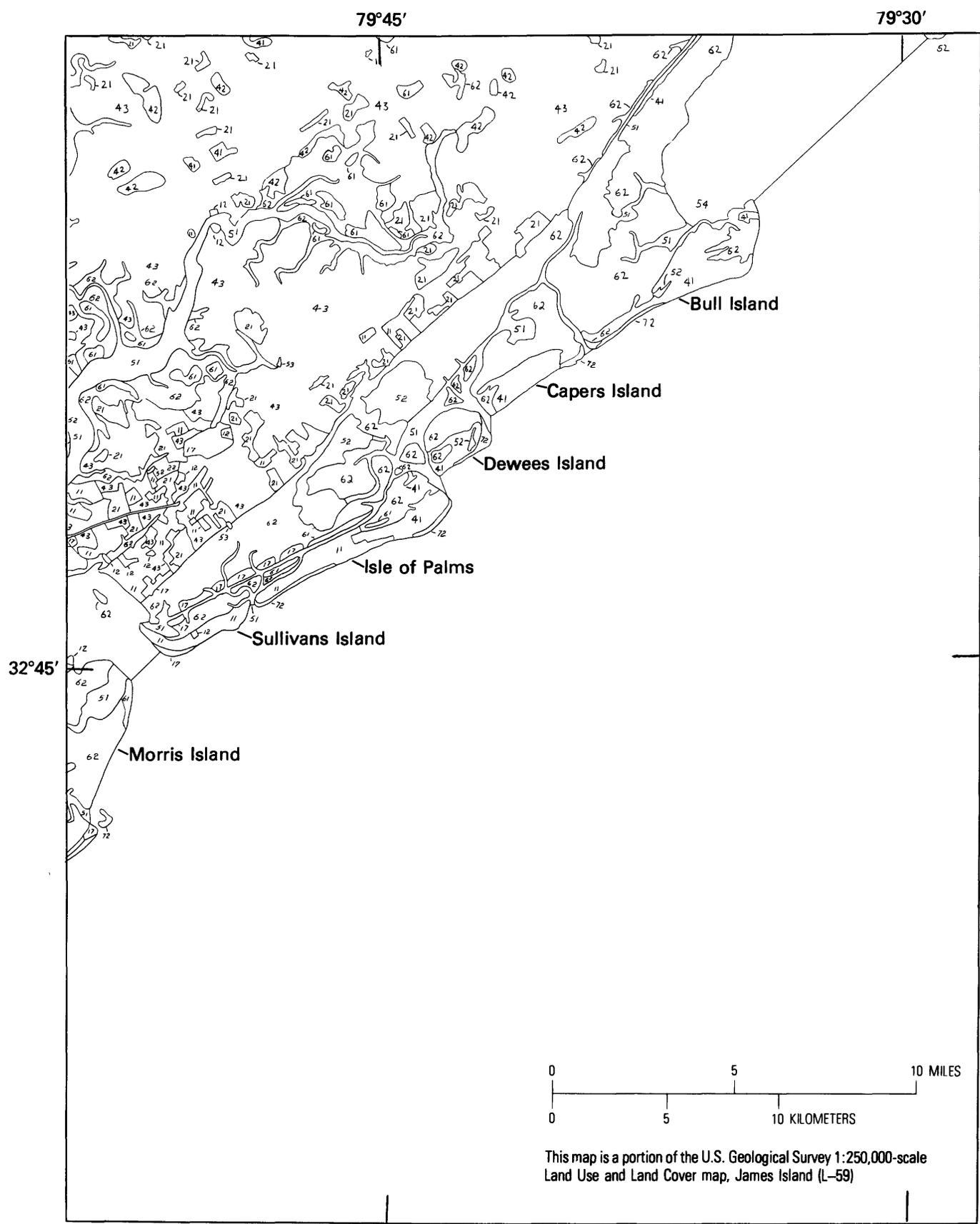


FIGURE 53. - Land use and land cover map of the coastal area near Isle of Palms, S.C., with associated barrier islands.

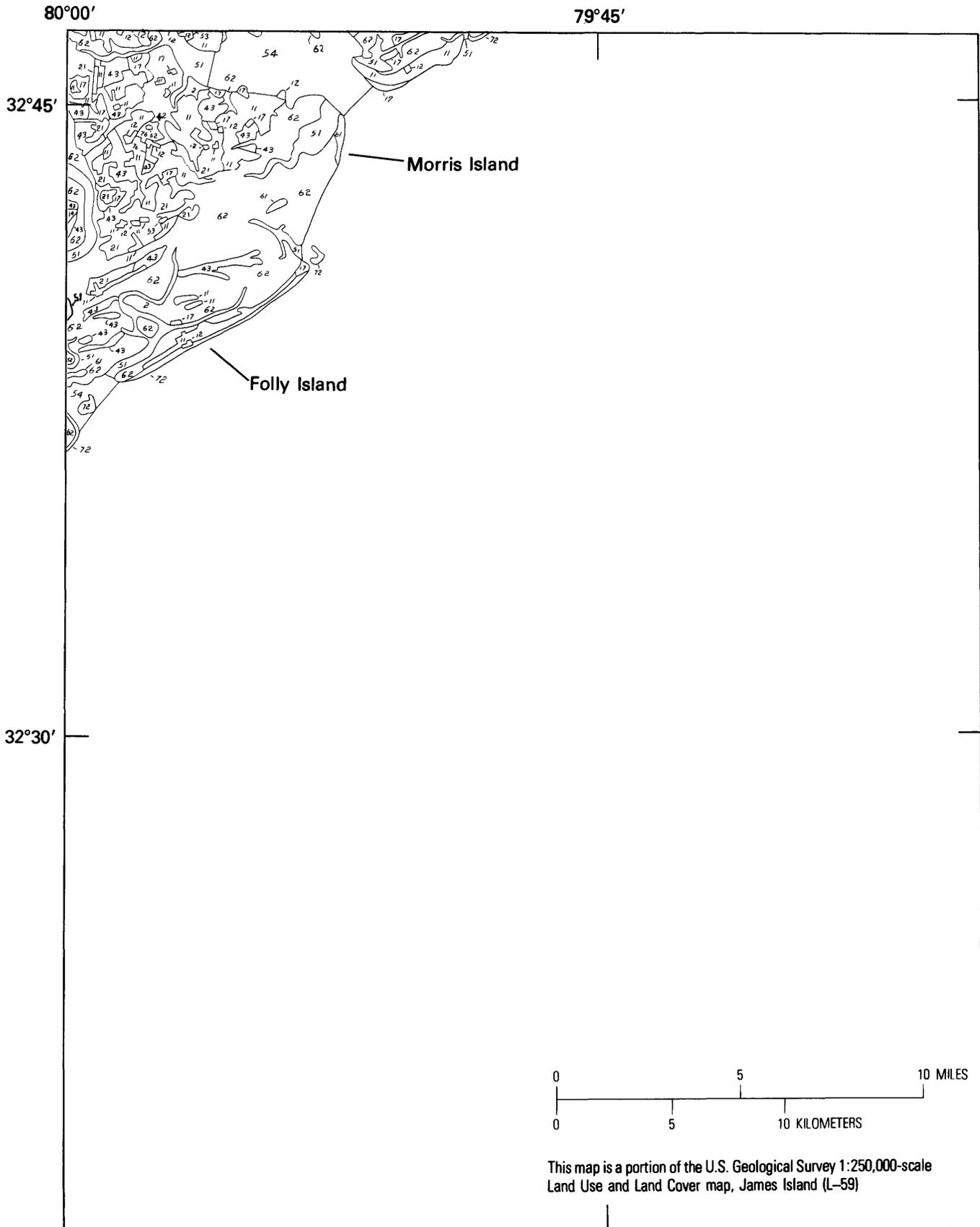


FIGURE 54. - Land use and land cover map of the coastal area near Charleston, S.C., with associated barrier islands.

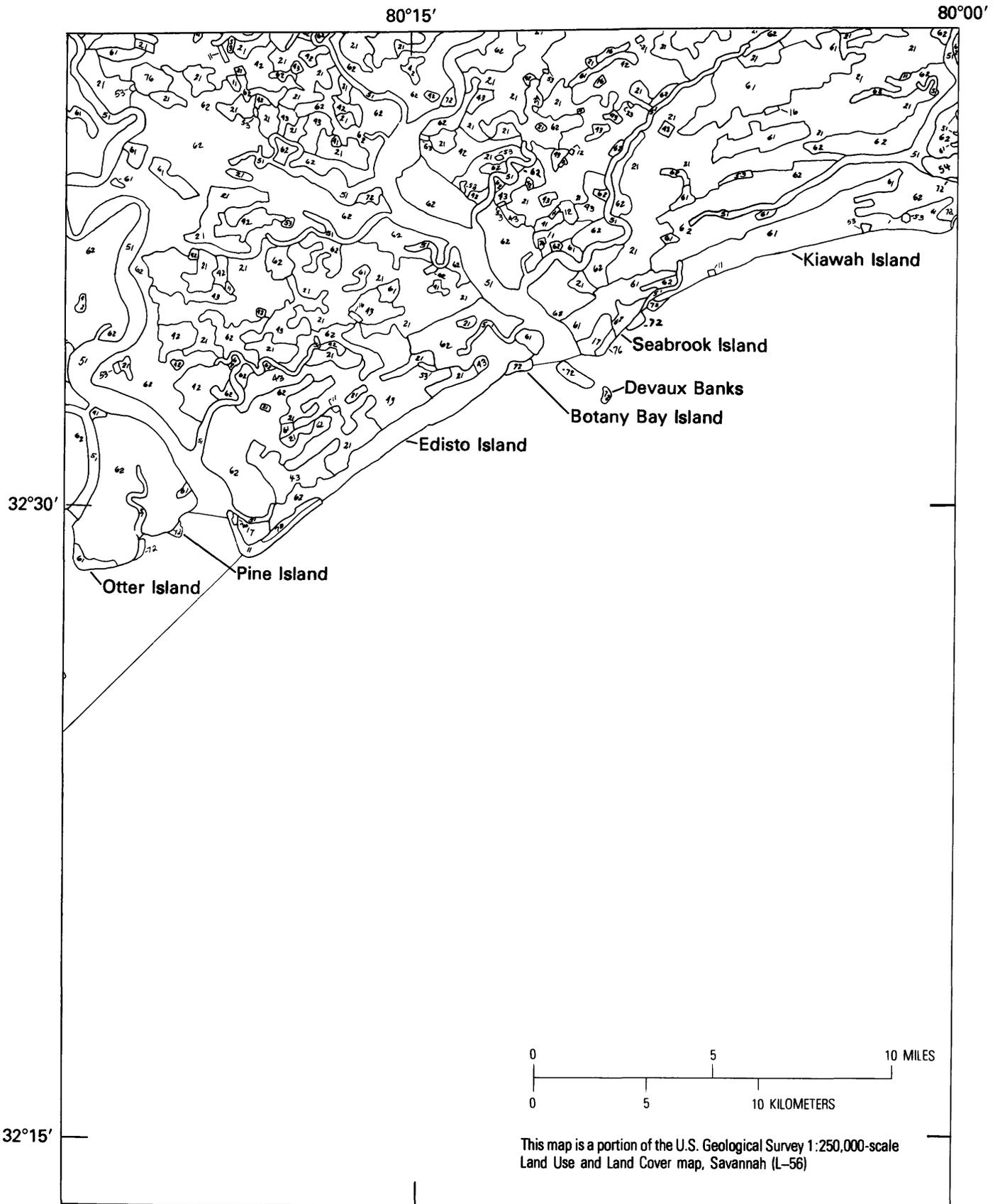


FIGURE 55. - Land use and land cover map of the coastal area near Edisto Island, S.C., with associated barrier islands.

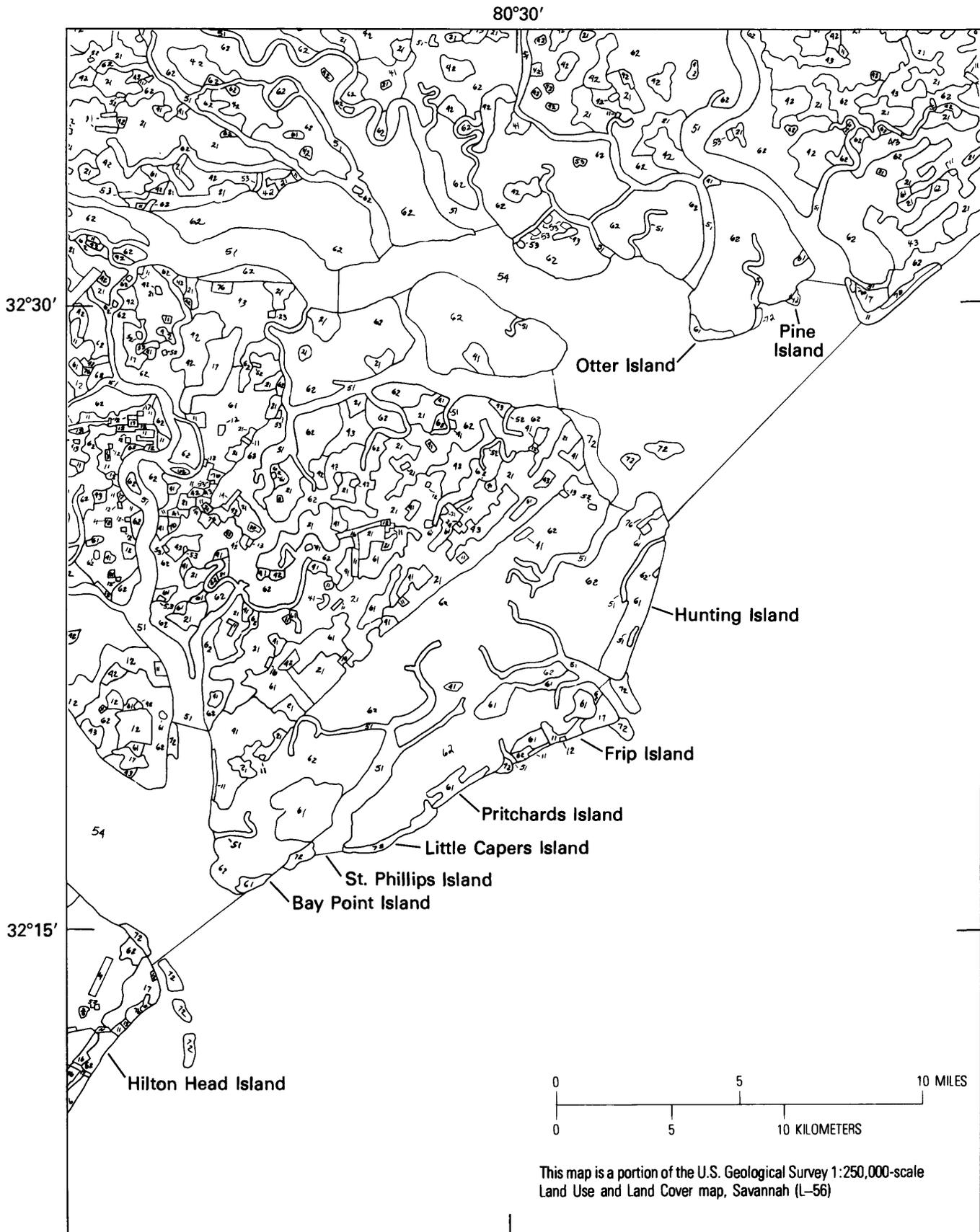


FIGURE 56. — Land use and land cover map of the coastal area near Beaufort, S.C., with associated barrier islands.

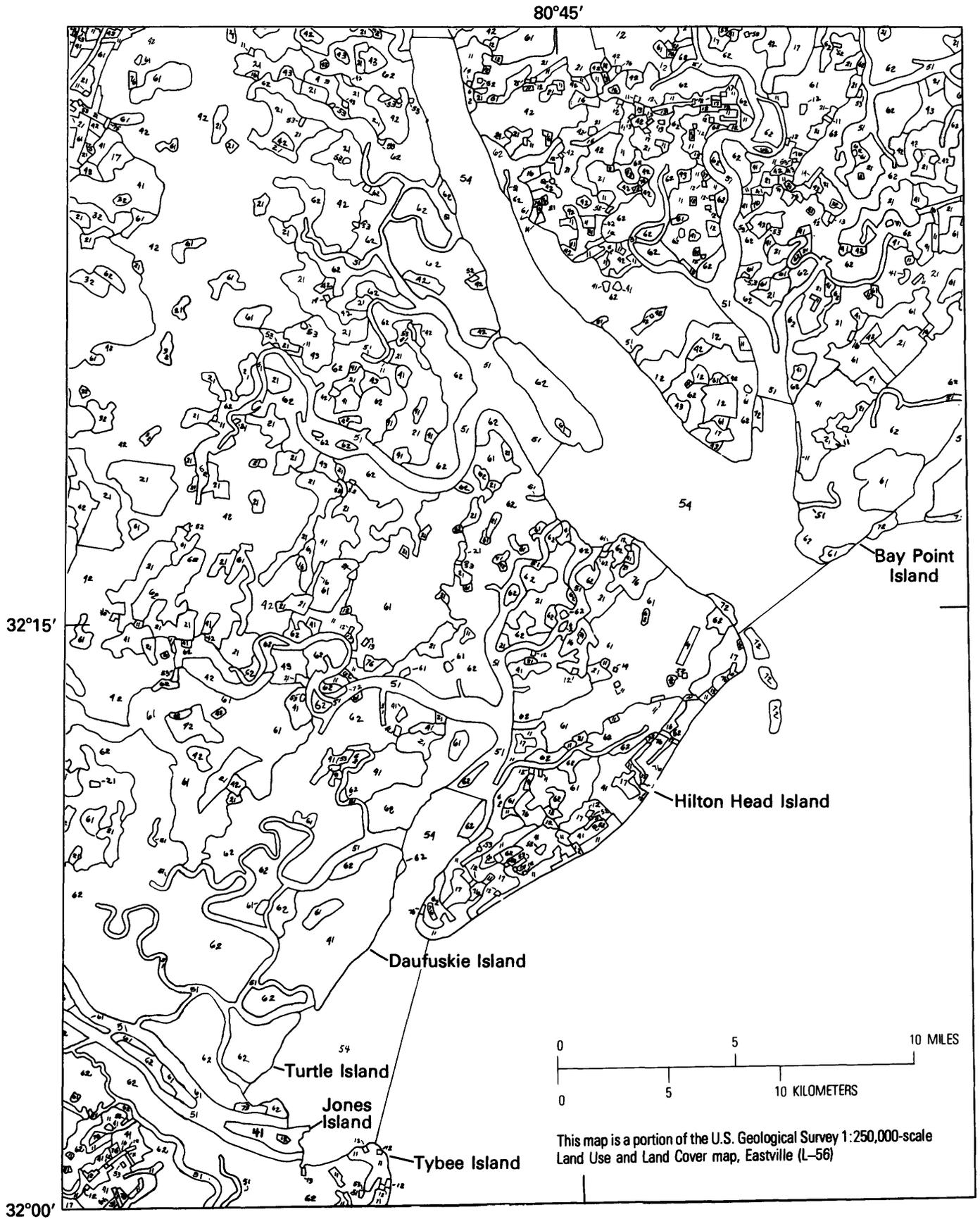


FIGURE 57. - Land use and land cover map of the coastal area near Hilton Head, S.C., with associated barrier islands.

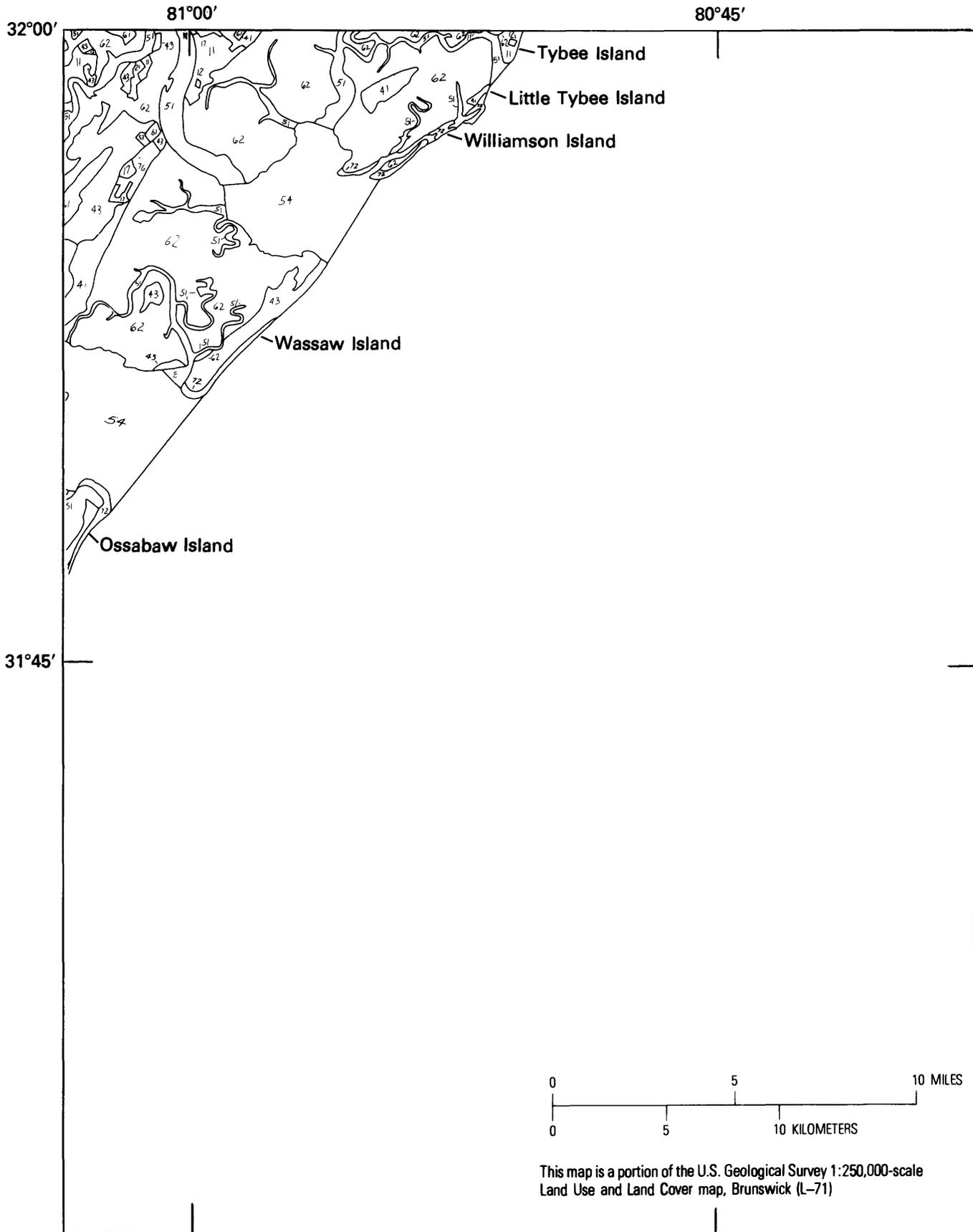


FIGURE 58.—Land use and land cover map of the coastal area near Savannah Beach, Ga., with associated barrier islands.

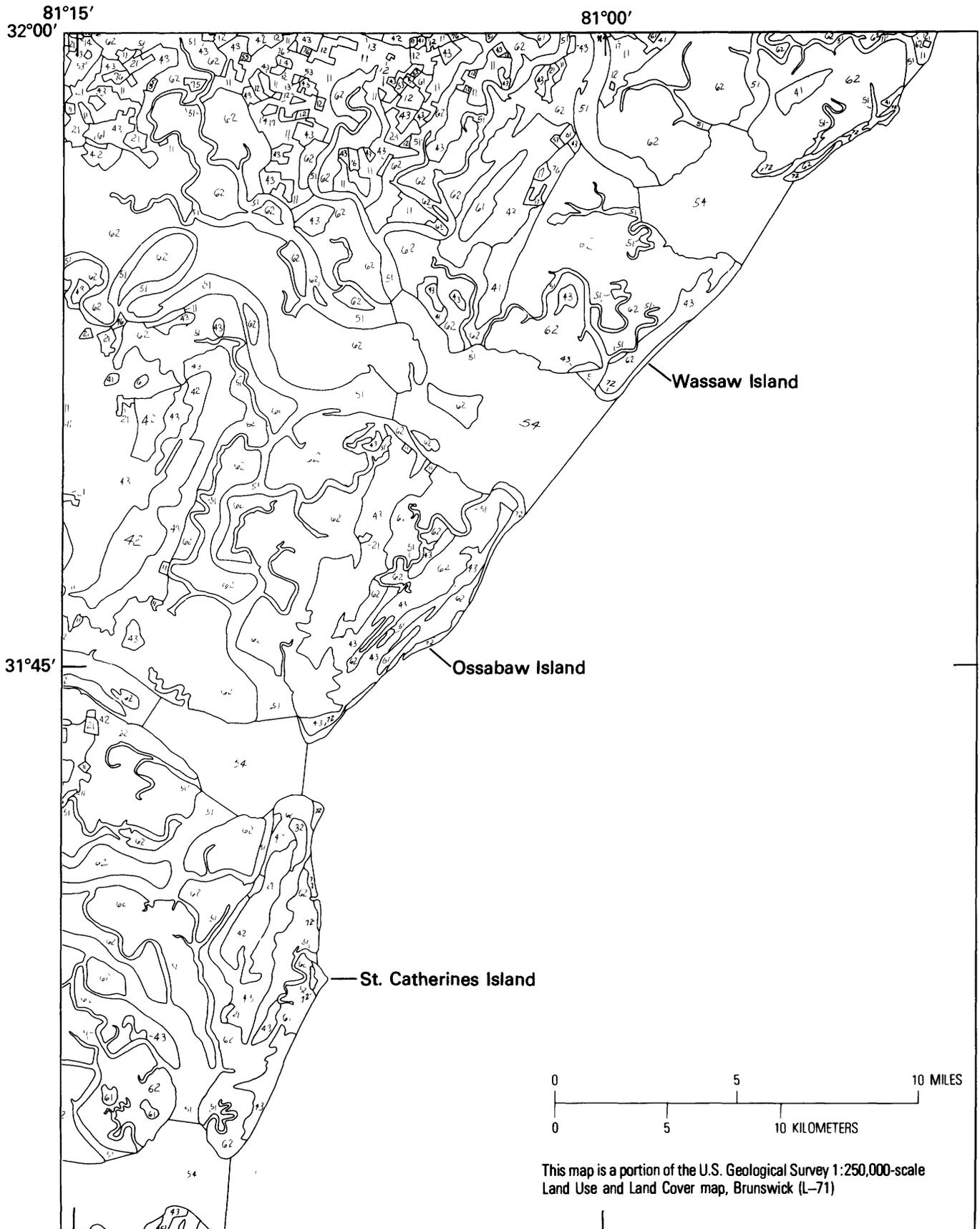


FIGURE 59. — Land use and land cover map of the coastal area near St. Catherines Island, Ga., with associated barrier islands.

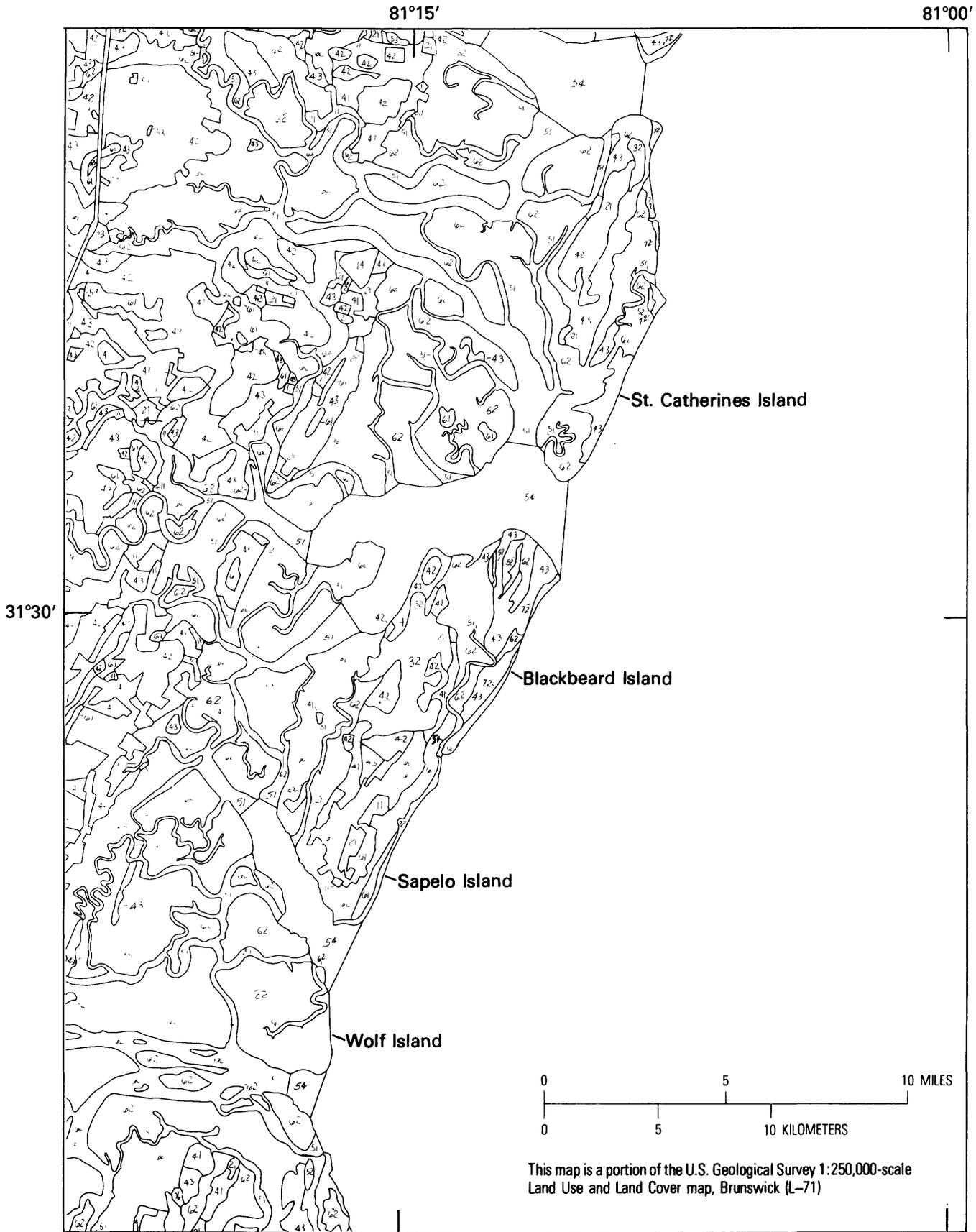


FIGURE 60. - Land use and land cover map of the coastal area near Sapelo Island, Ga., with associated barrier islands.

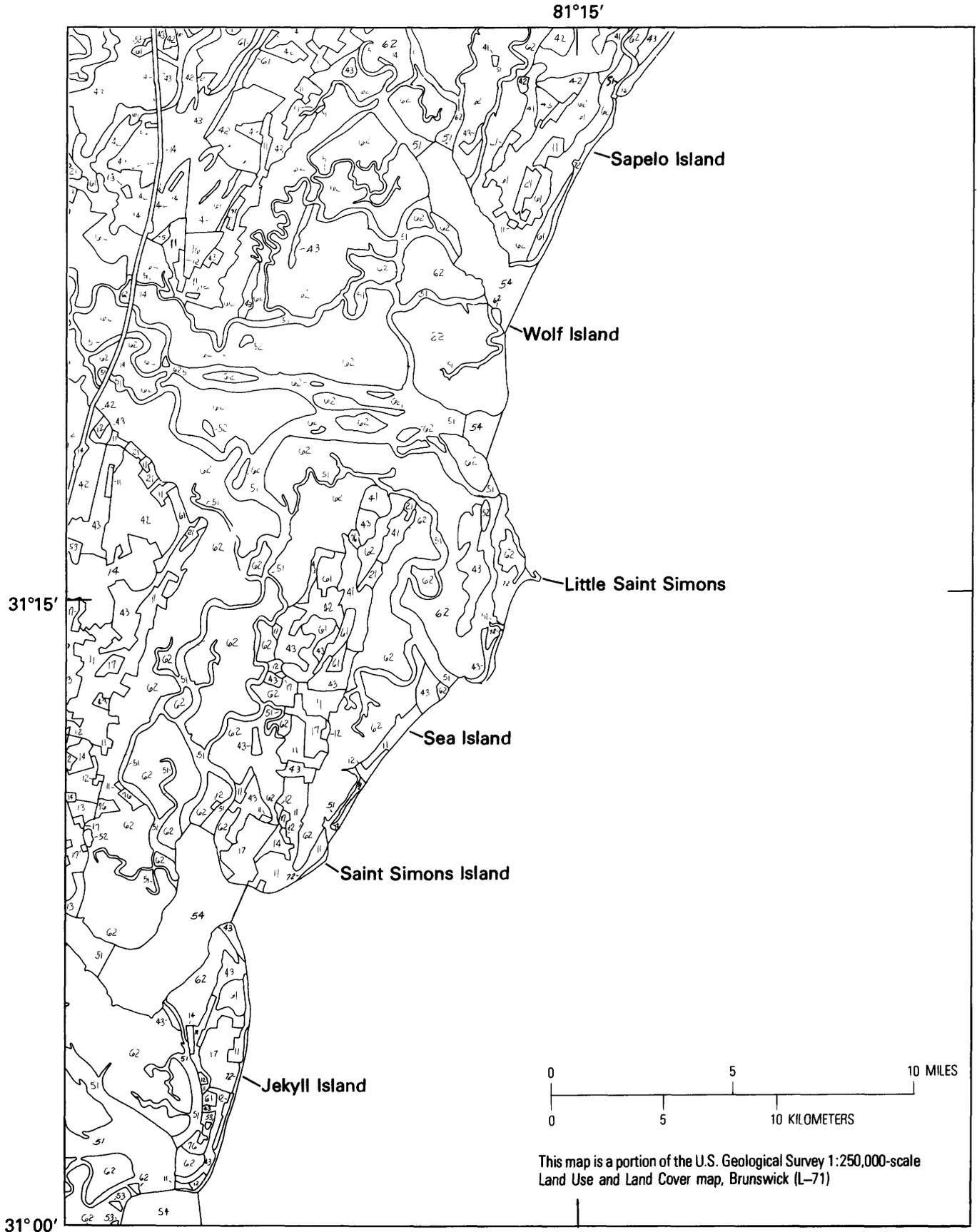


FIGURE 61. - Land use and land cover map of the coastal area near Brunswick, Ga., with associated barrier islands.

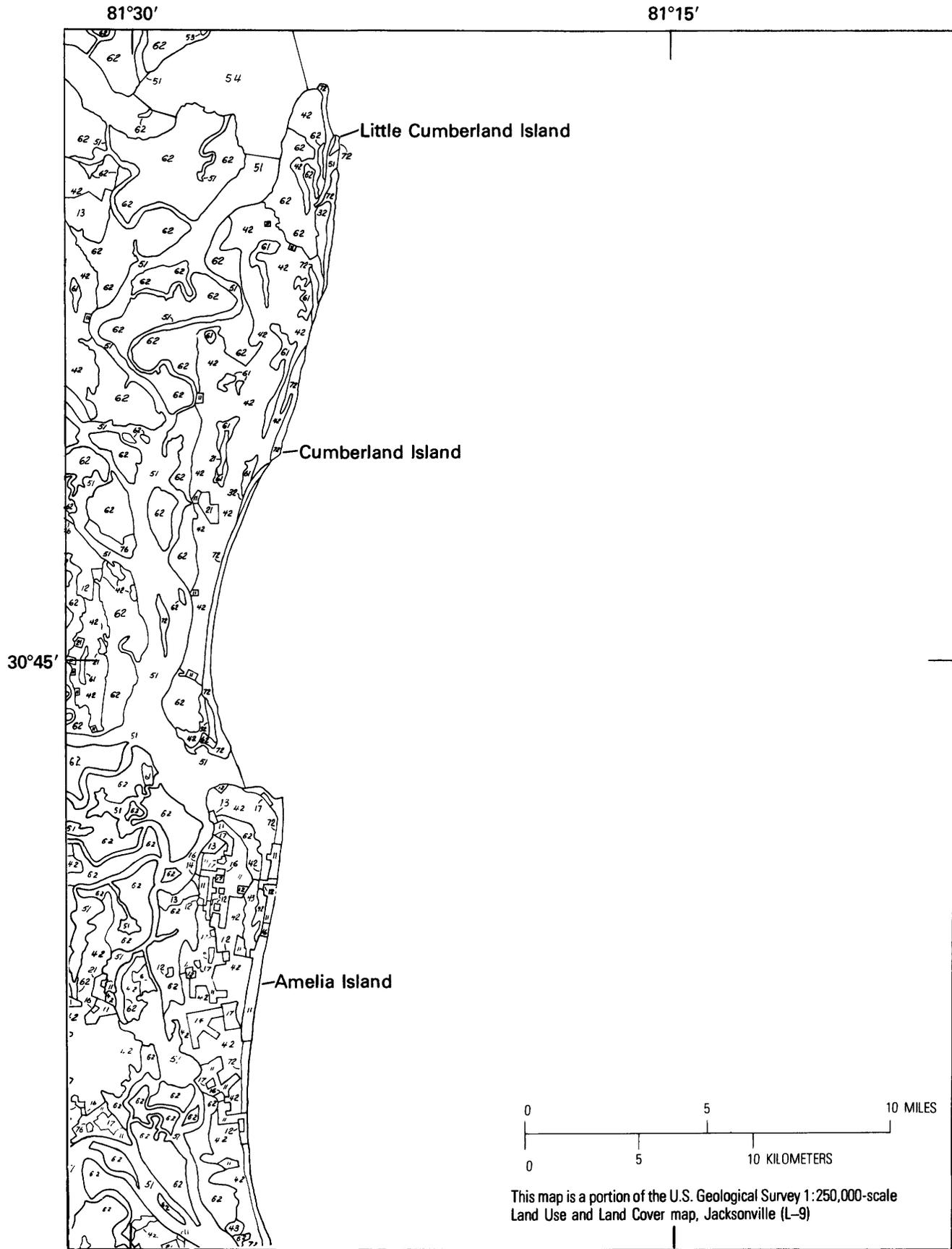


FIGURE 62.—Land use and land cover map of the coastal area near Cumberland Island, Ga., with associated barrier islands.

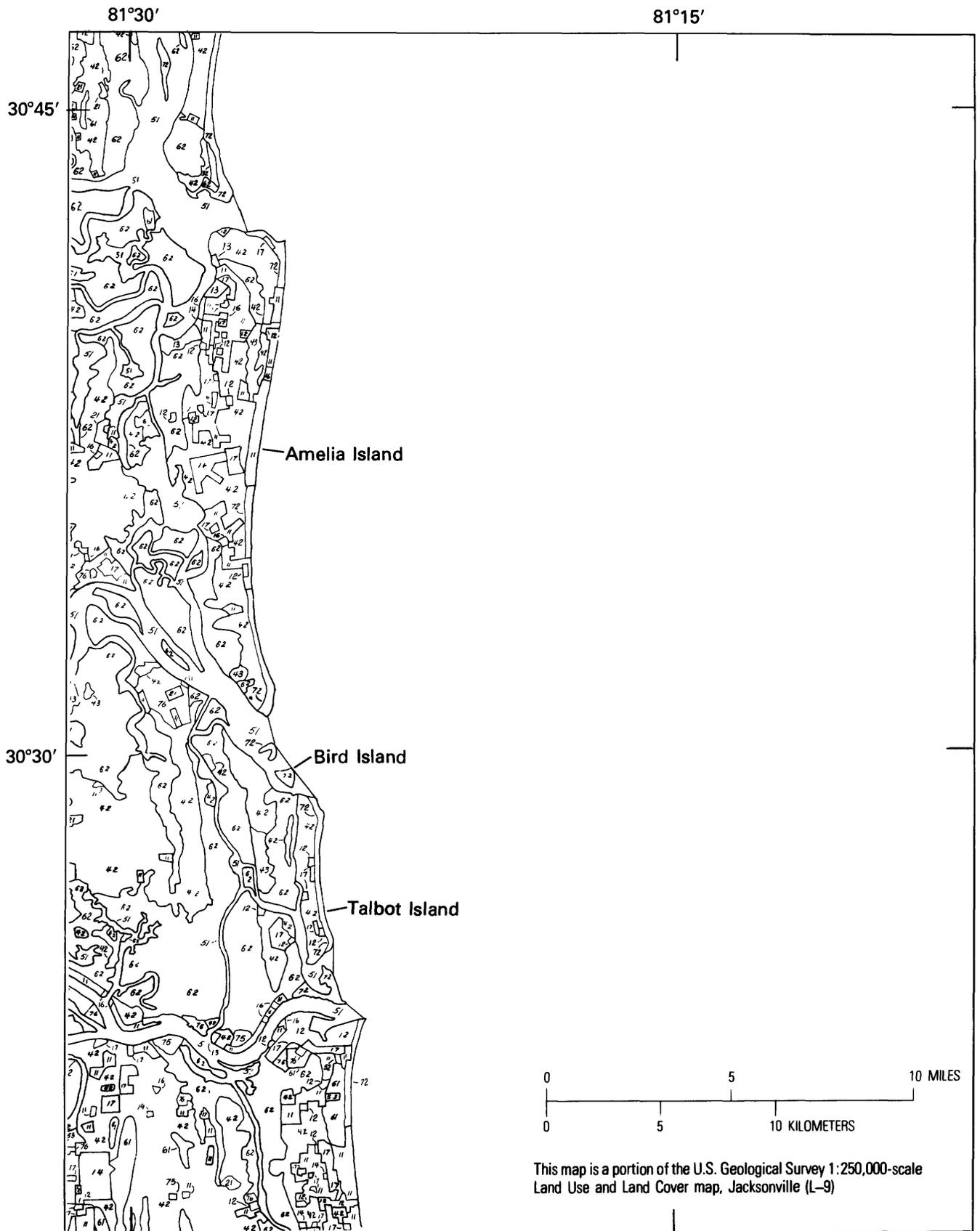
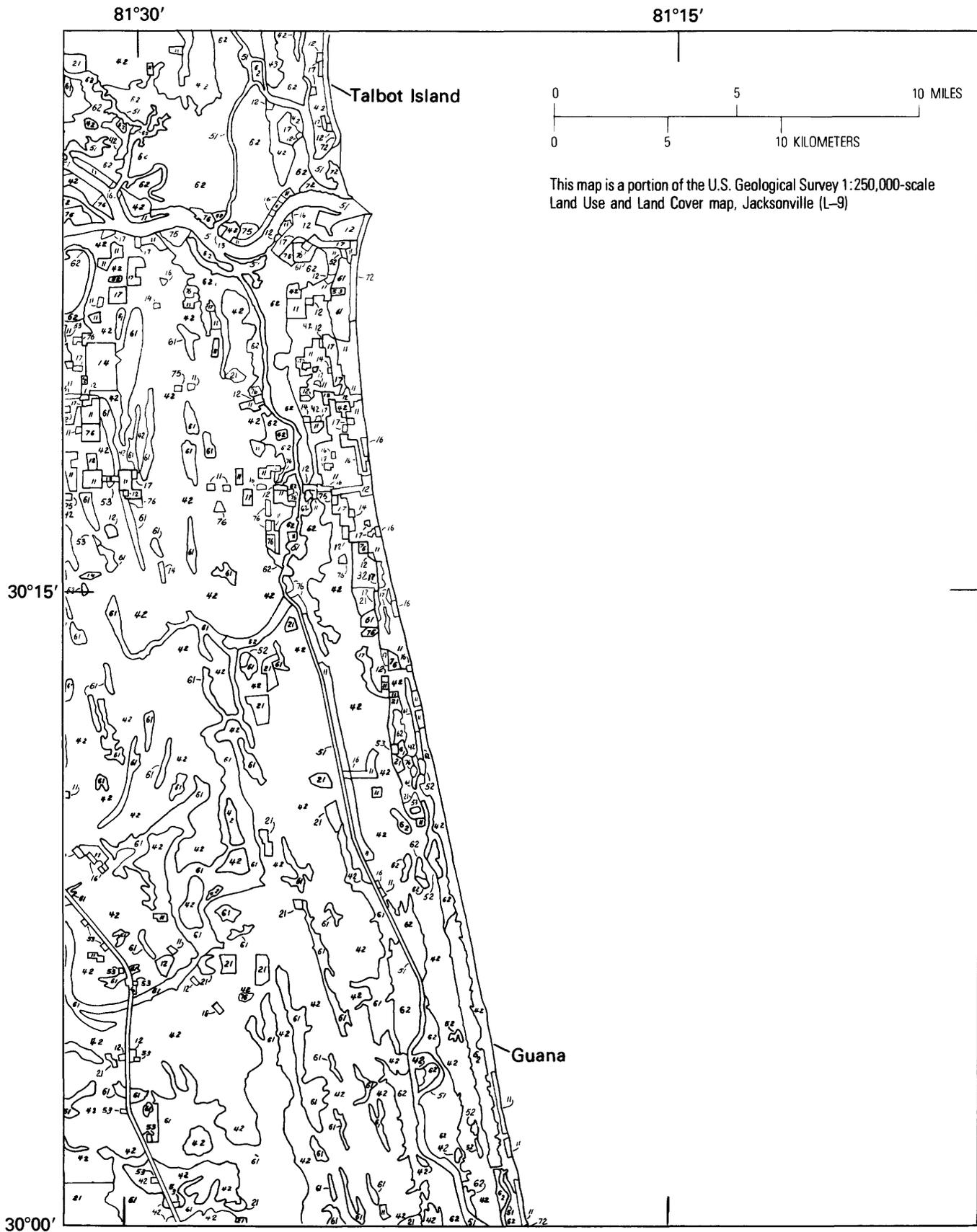


FIGURE 63.—Land use and land cover map of the coastal area near Fernandina Beach, Fla., with associated barrier islands.



This map is a portion of the U.S. Geological Survey 1:250,000-scale Land Use and Land Cover map, Jacksonville (L-9)

FIGURE 64. - Land use and land cover map of the coastal area near Jacksonville, Fla., with associated barrier islands.

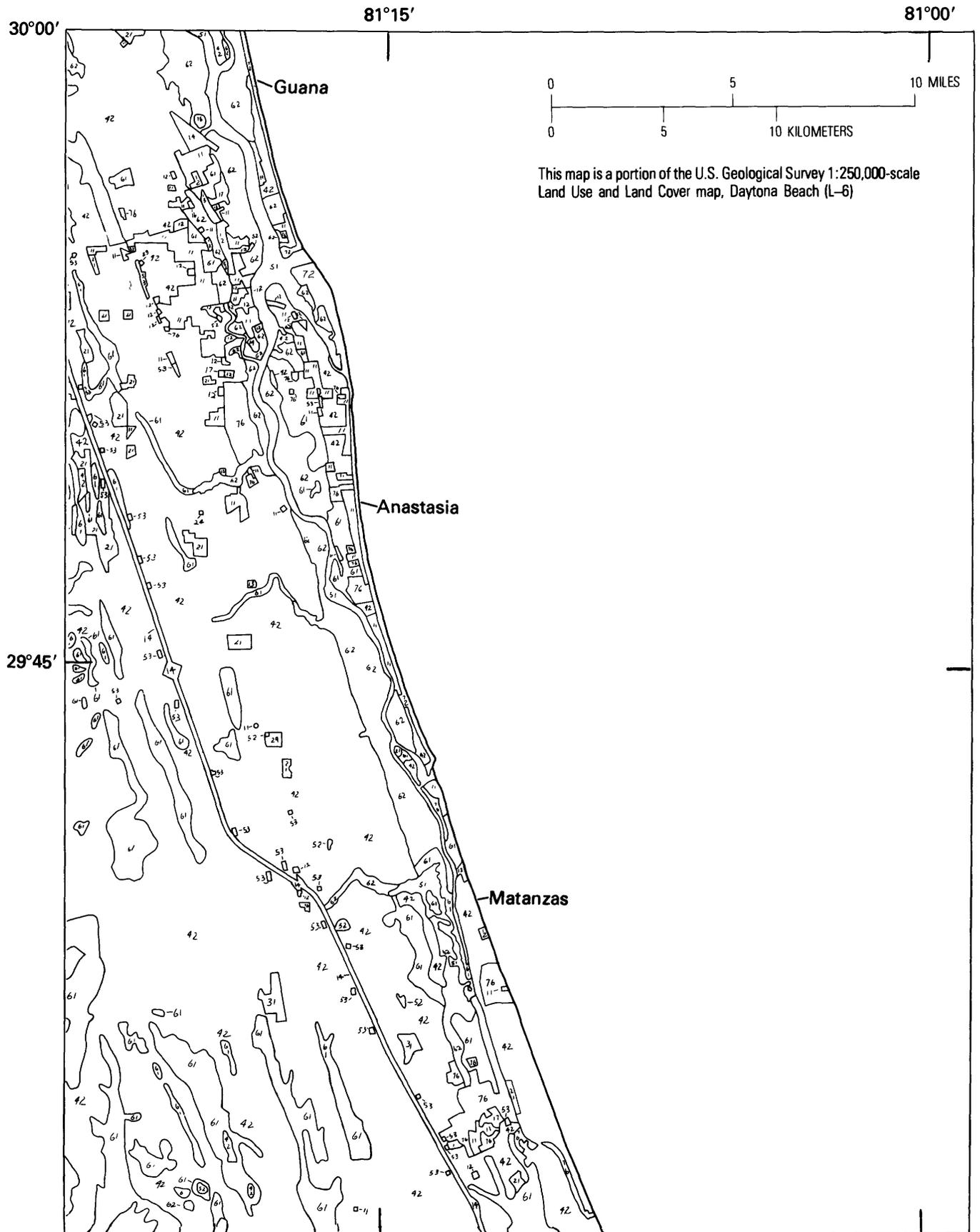
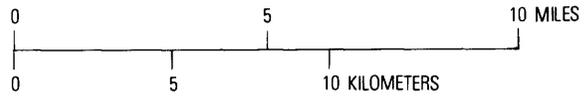


FIGURE 65. - Land use and land cover map of the coastal area near St. Augustine, Fla., with associated barrier islands.

81°00'



This map is a portion of the U.S. Geological Survey 1:250,000-scale Land Use and Land Cover map, Daytona Beach (L-6)

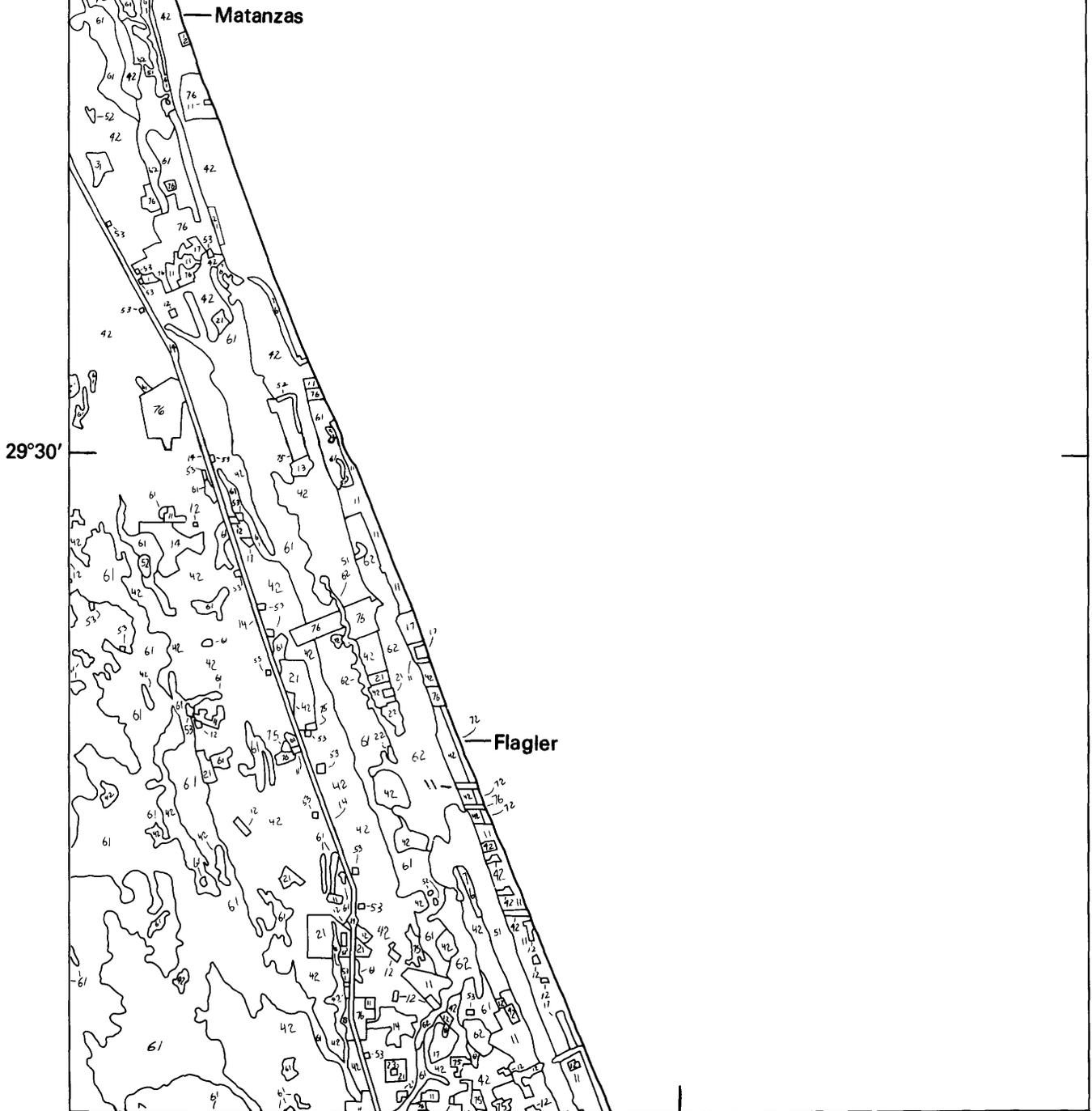


FIGURE 66. - Land use and land cover map of the coastal area near Marineland, Fla., with associated barrier islands.

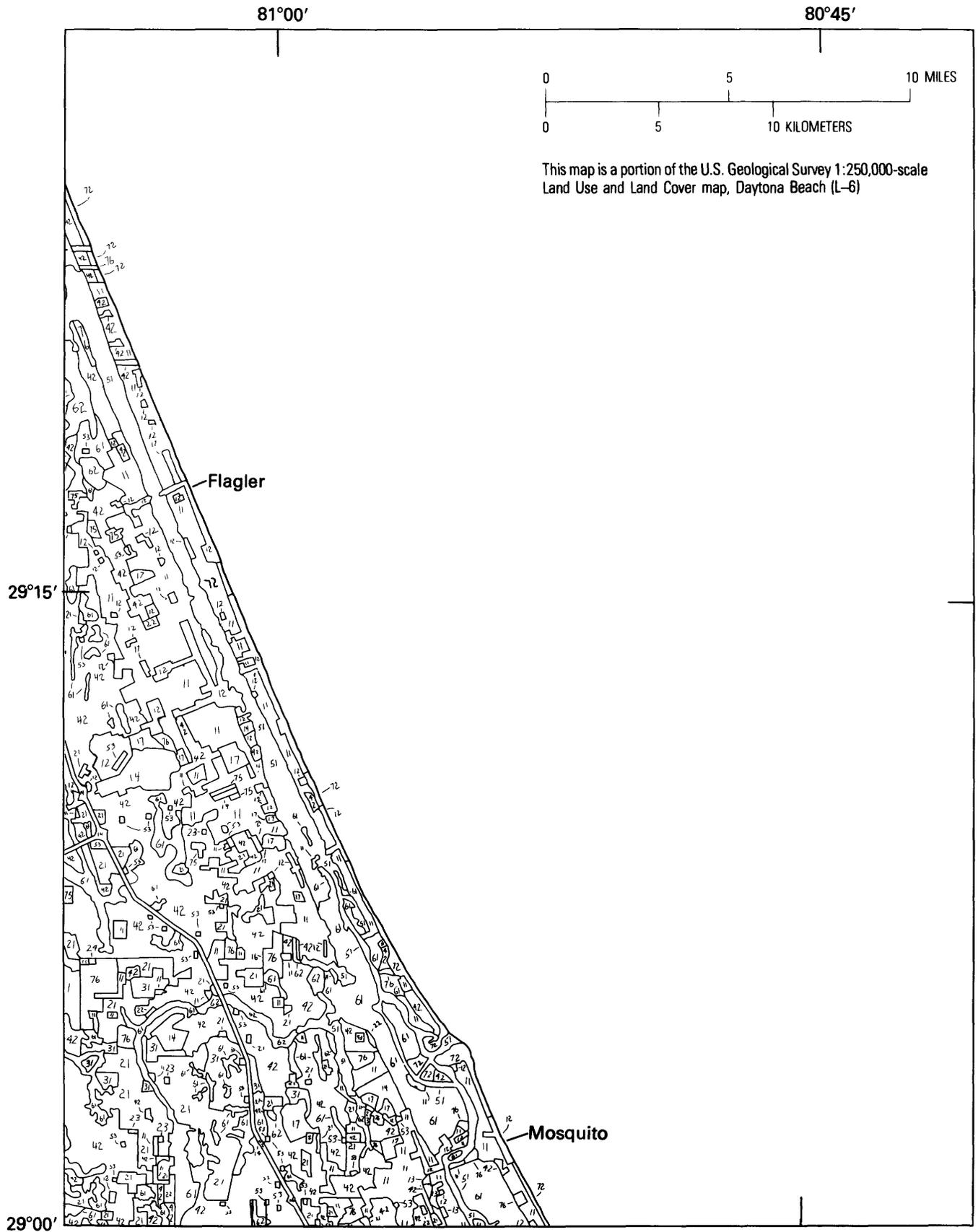


FIGURE 67. - Land use and land cover map of the coastal area near Daytona Beach, Fla., with associated barrier islands.

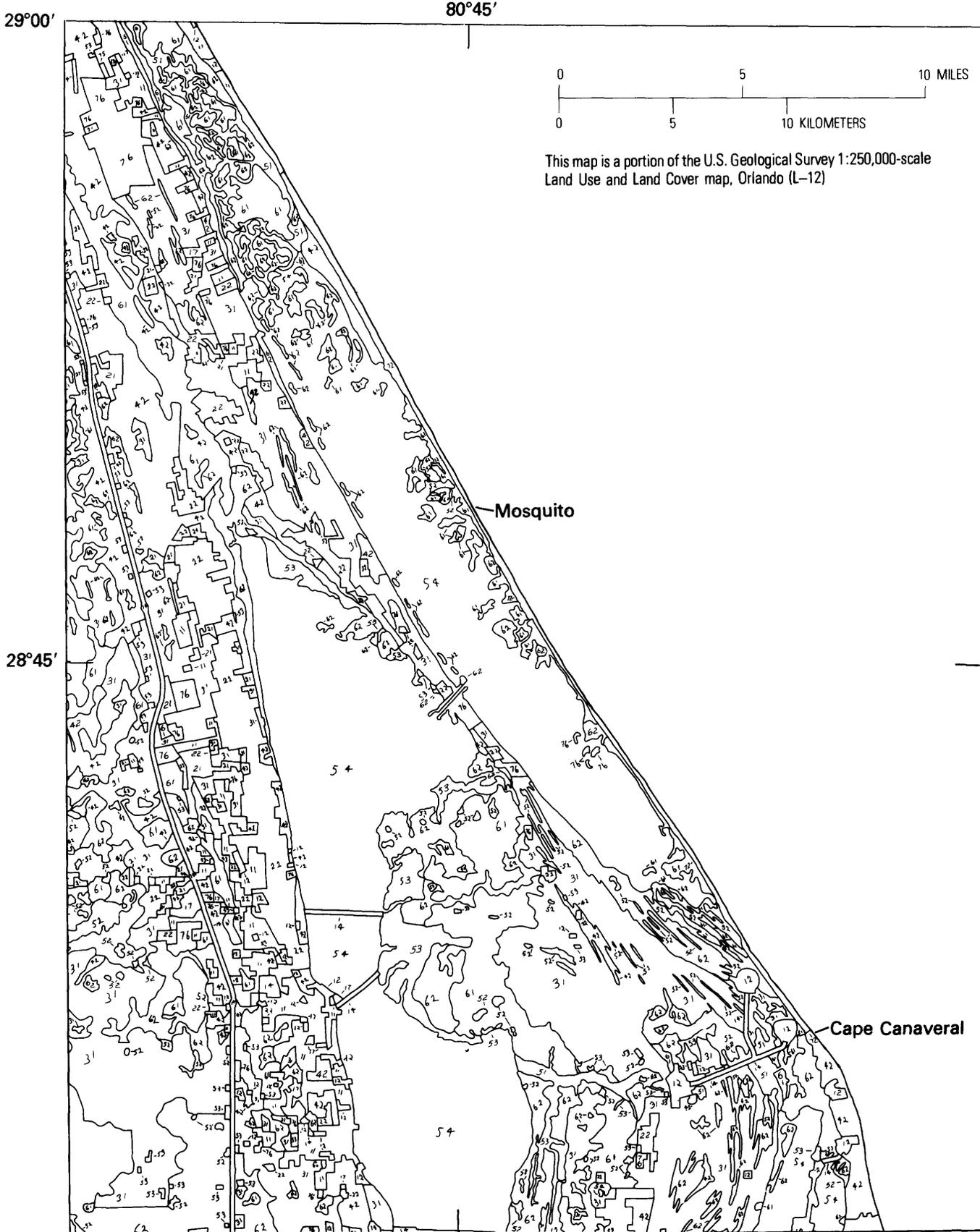


FIGURE 68.—Land use and land cover map of the coastal area near Titusville, Fla., with associated barrier islands.

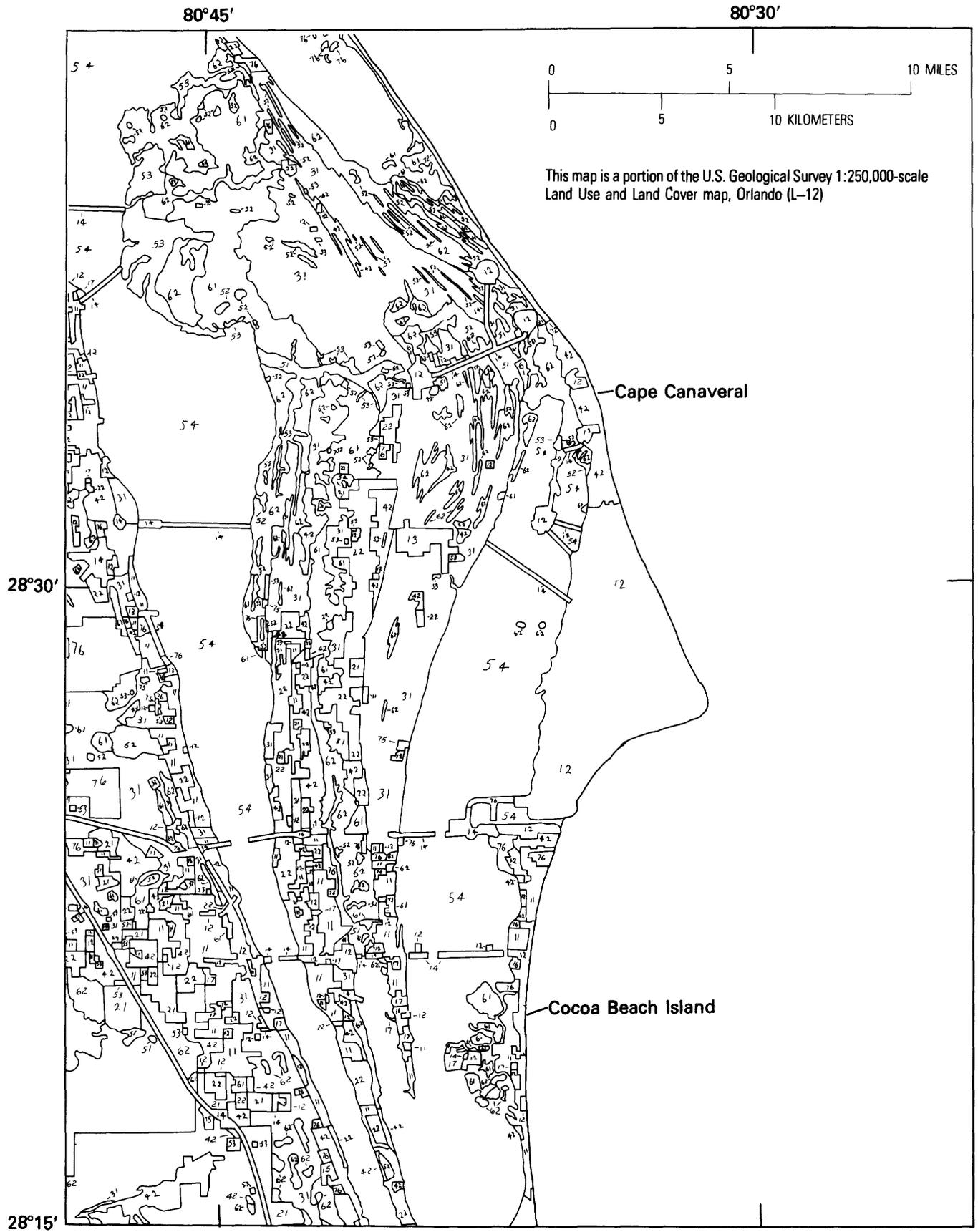


FIGURE 69. - Land use and land cover map of the coastal area near Merritt Island, Fla., with associated barrier islands.

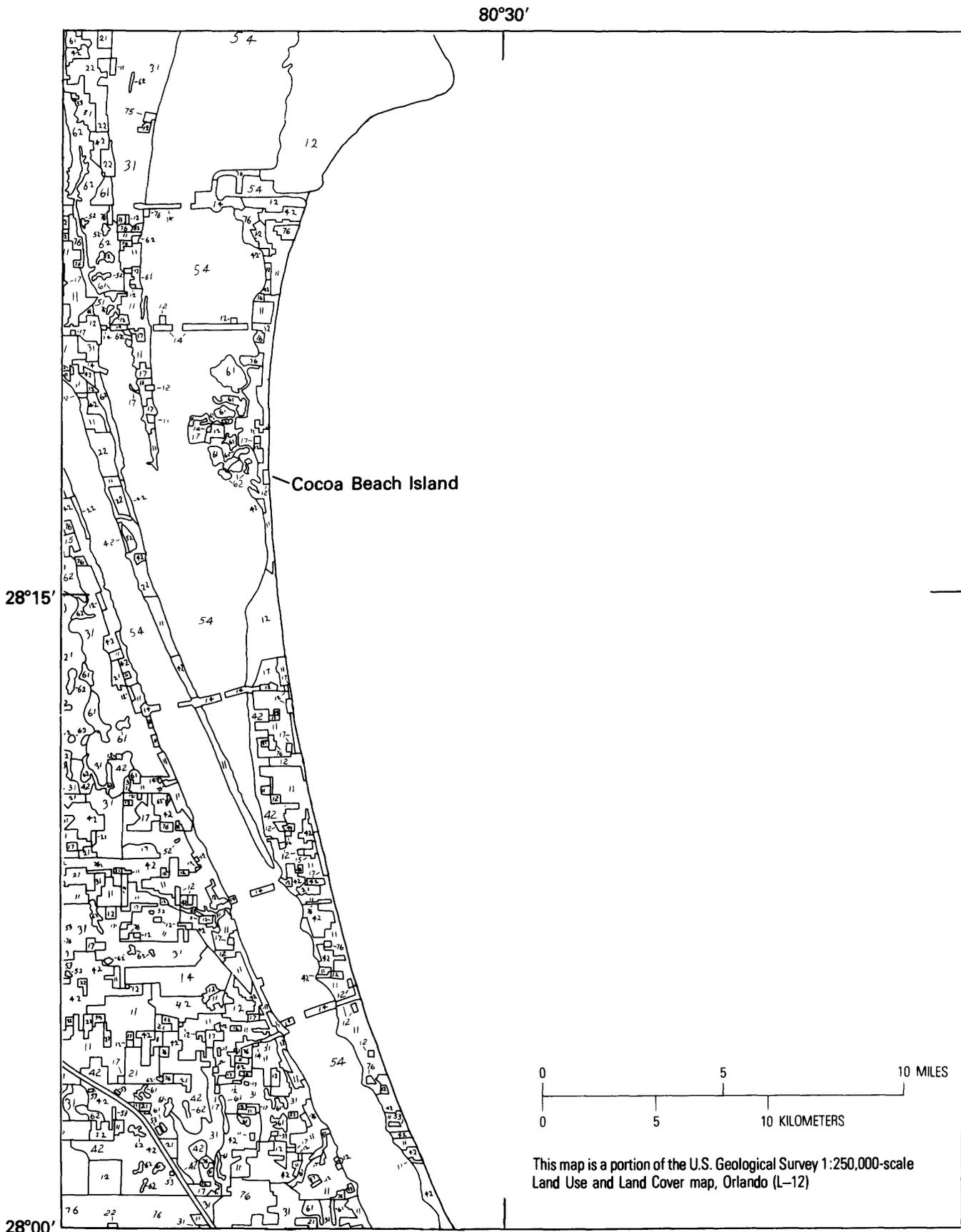


FIGURE 70. - Land use and land cover map of the coastal area near Cocoa Beach, Fla., with associated barrier islands.

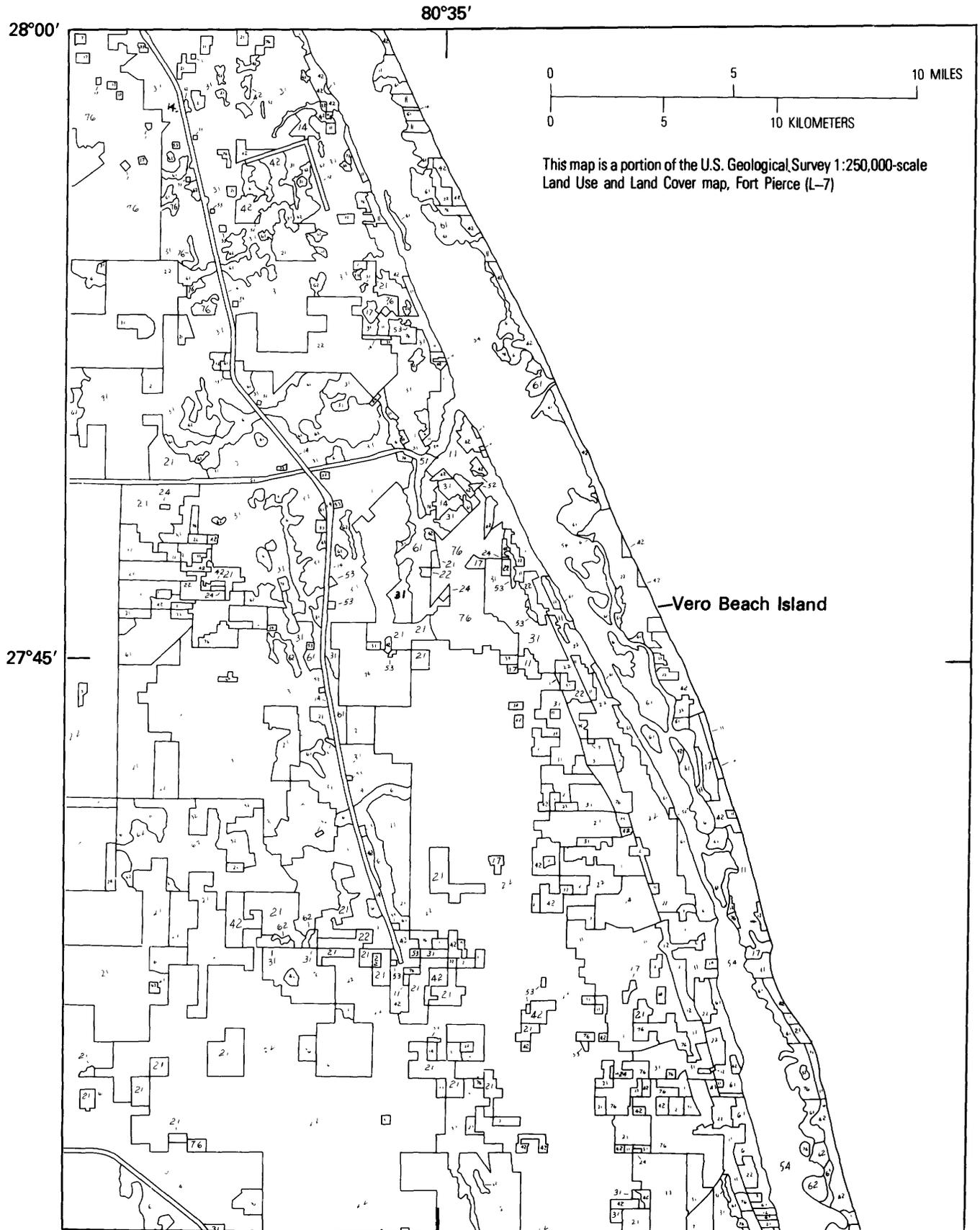


FIGURE 71. -Land use and land cover map of the coastal area near Vero Beach, Fla., with associated barrier islands.

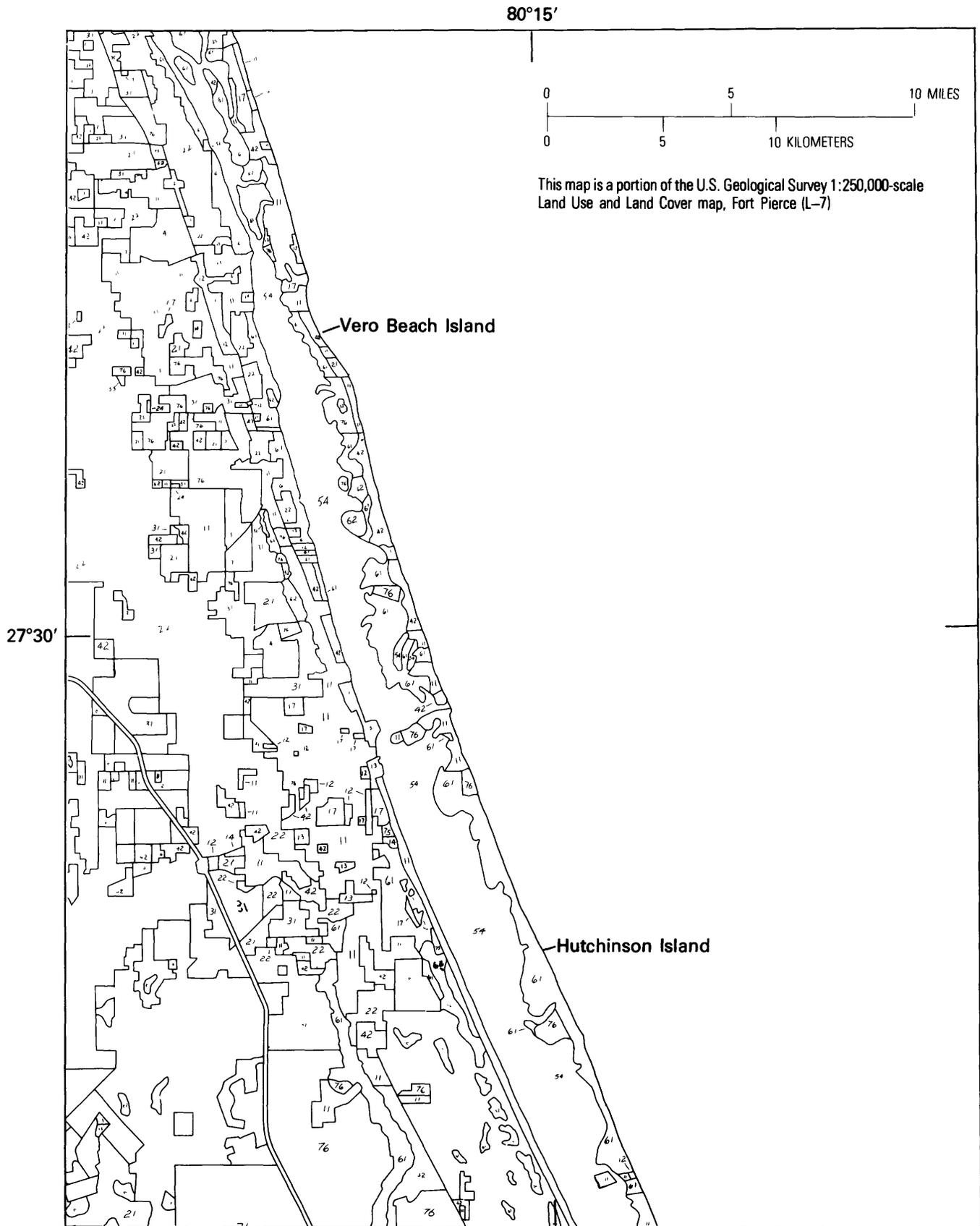


FIGURE 72. - Land use and land cover map of the coastal area near Fort Pierce, Fla., with associated barrier islands.

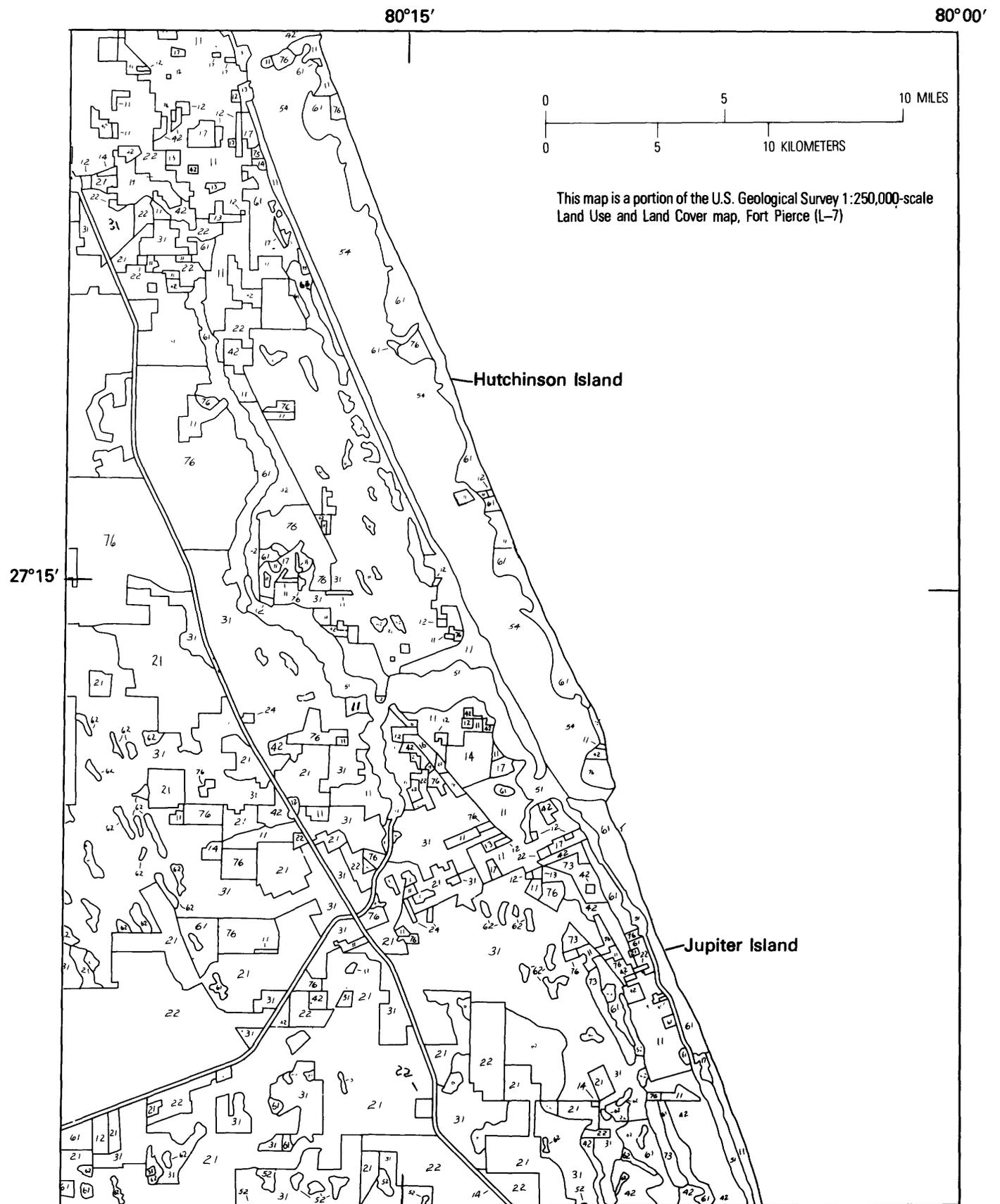


FIGURE 73. - Land use and land cover map of the coastal area near Jupiter, Fla., with associated barrier islands.

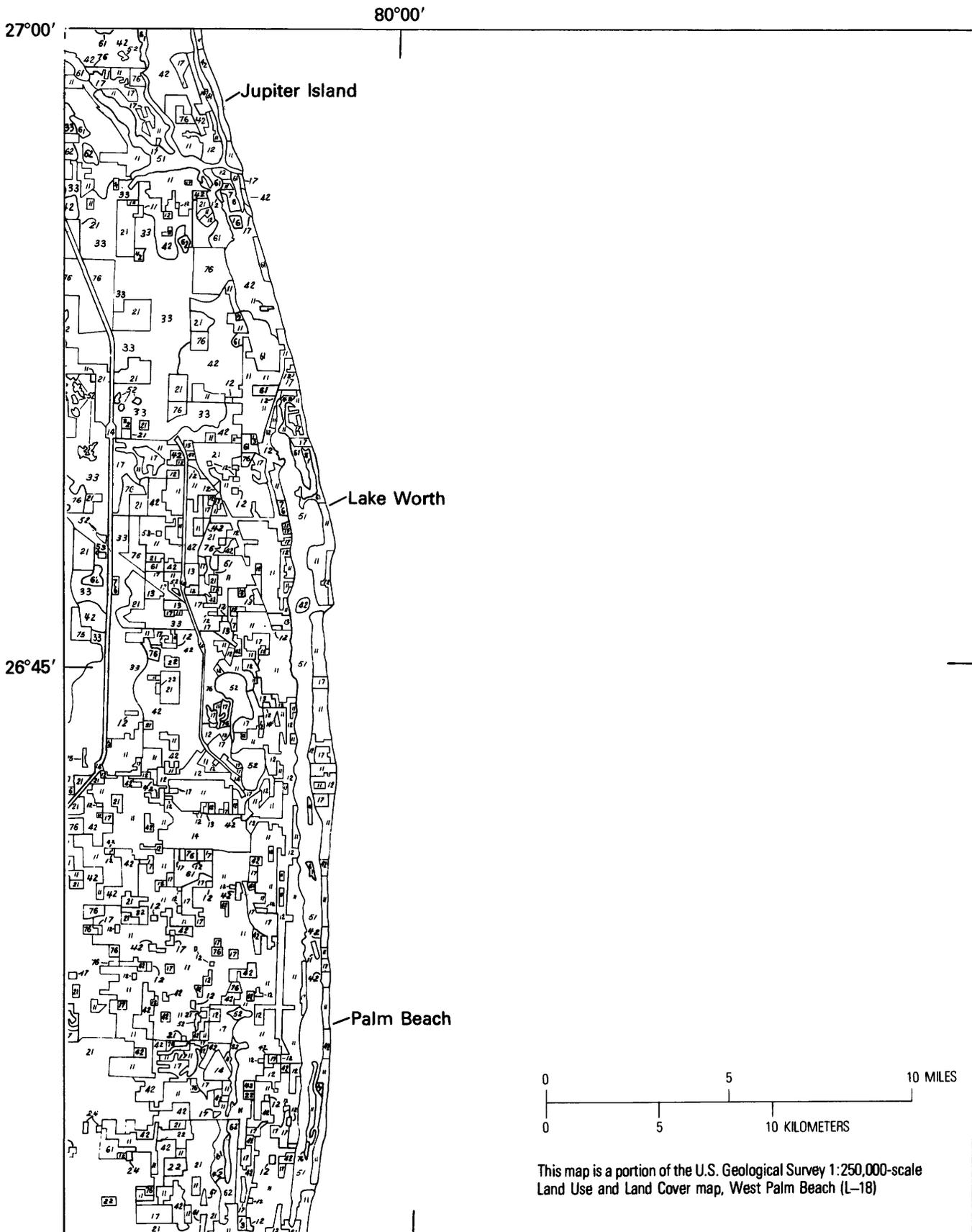


FIGURE 74. - Land use and land cover map of the coastal area near West Palm Beach, Fla., with associated barrier islands.

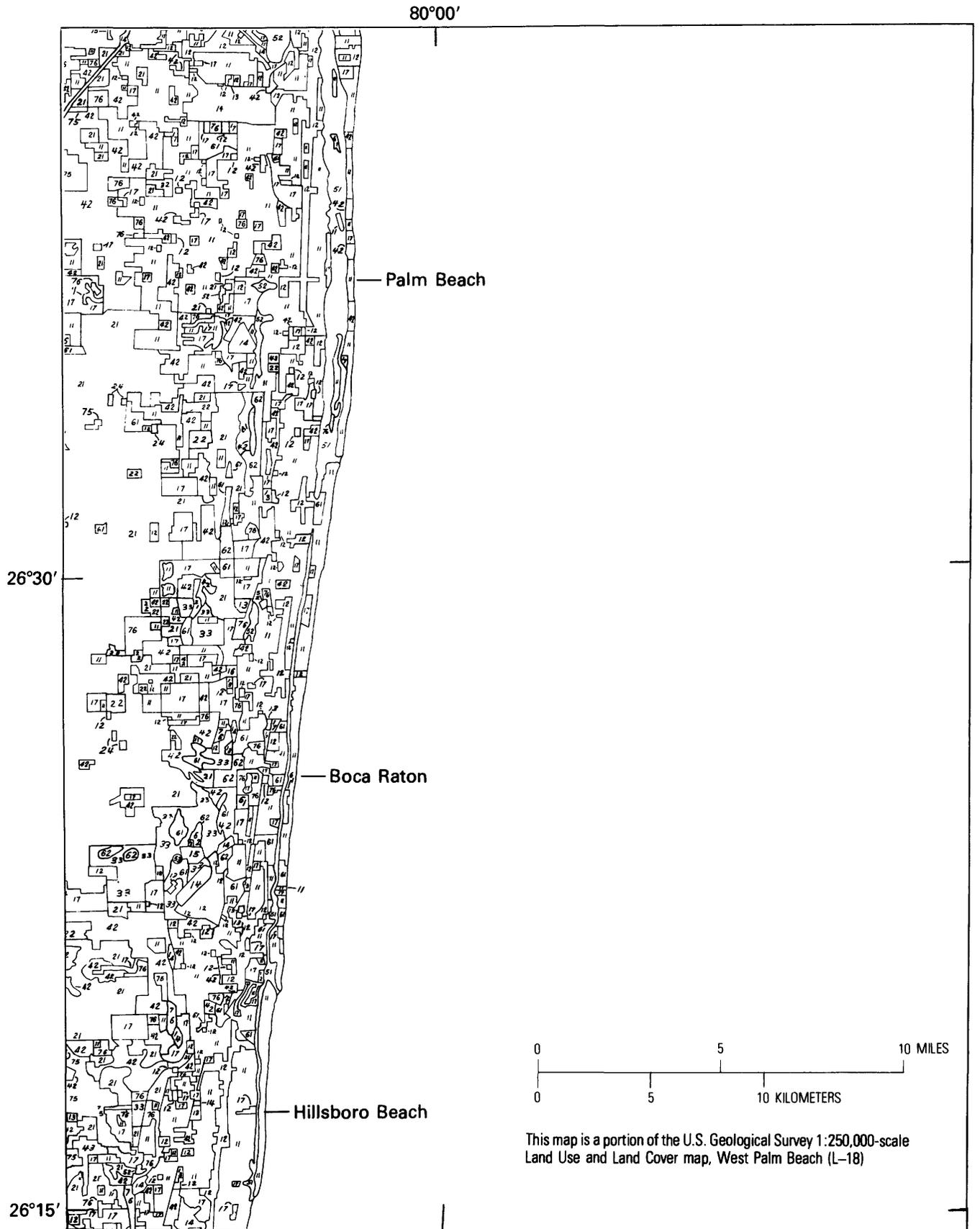


FIGURE 75. - Land use and land cover map of the coastal area near Boca Raton, Fla., with associated barrier islands.

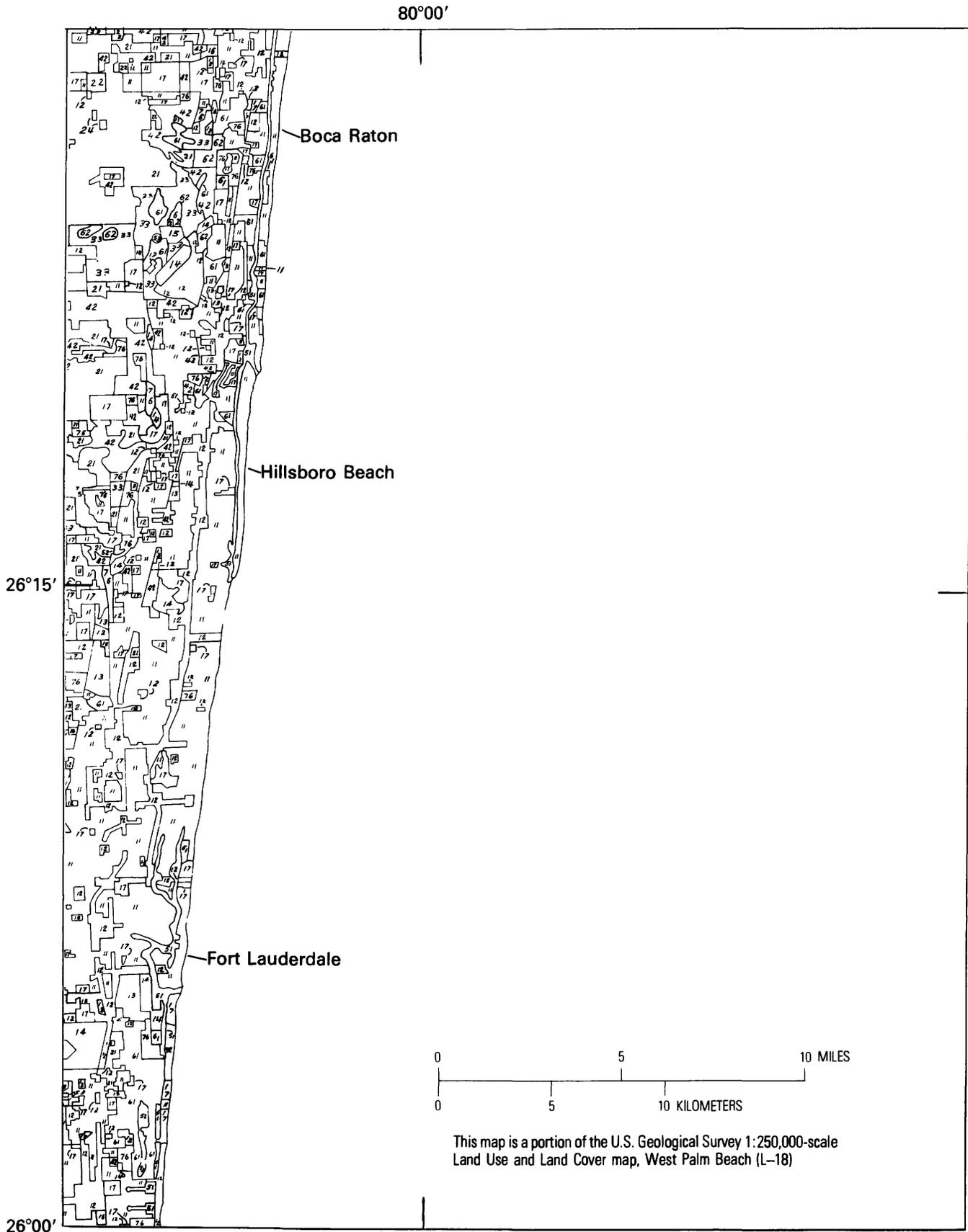


FIGURE 76. - Land use and land cover map of the coastal area near Ft. Lauderdale, Fla., with associated barrier islands.

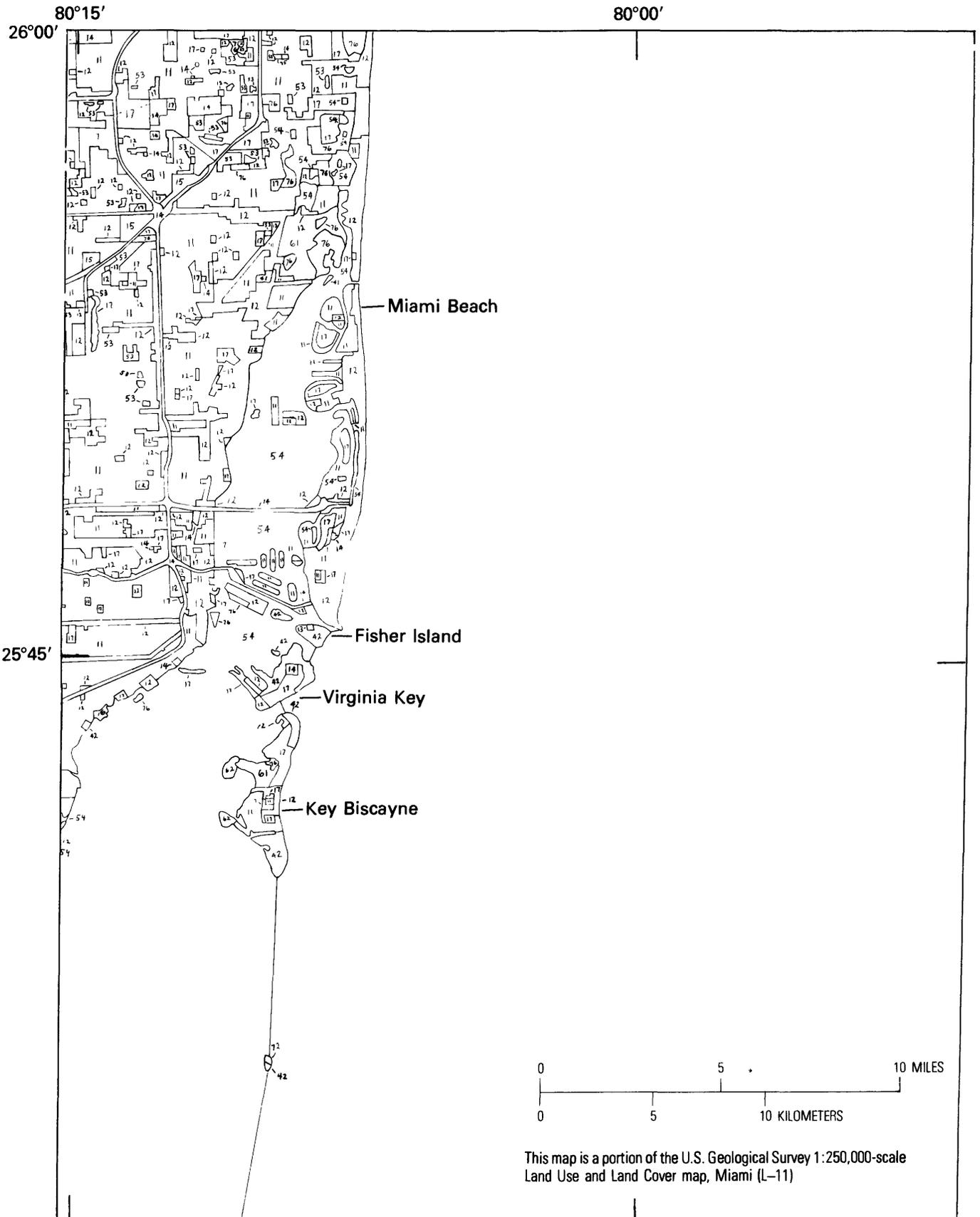


FIGURE 77. - Land use and land cover map of the coastal area near Miami, Fla., with associated barrier islands.

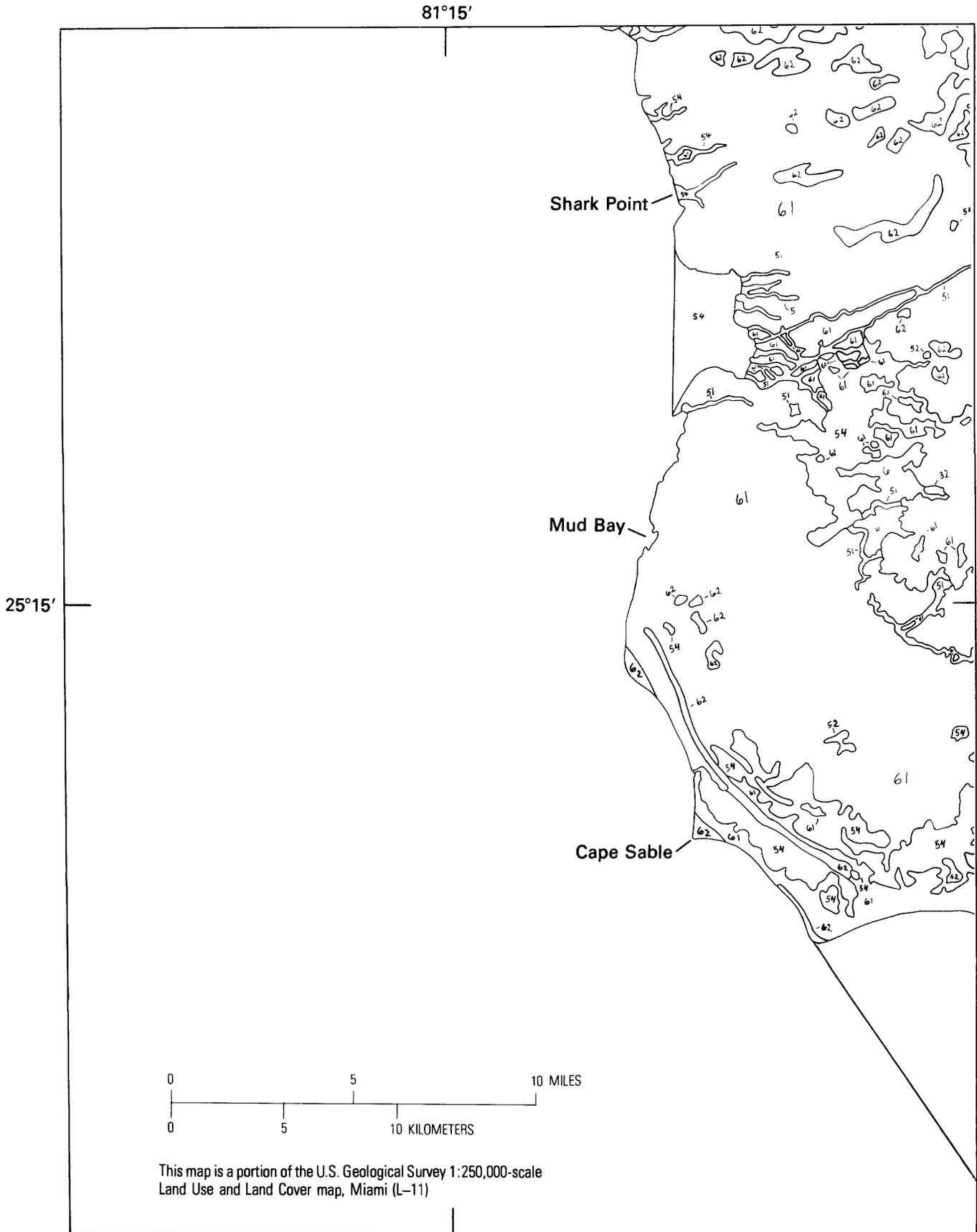


FIGURE 78.—Land use and land cover map of the coastal area near Cape Sable, Fla., with associated barrier islands.

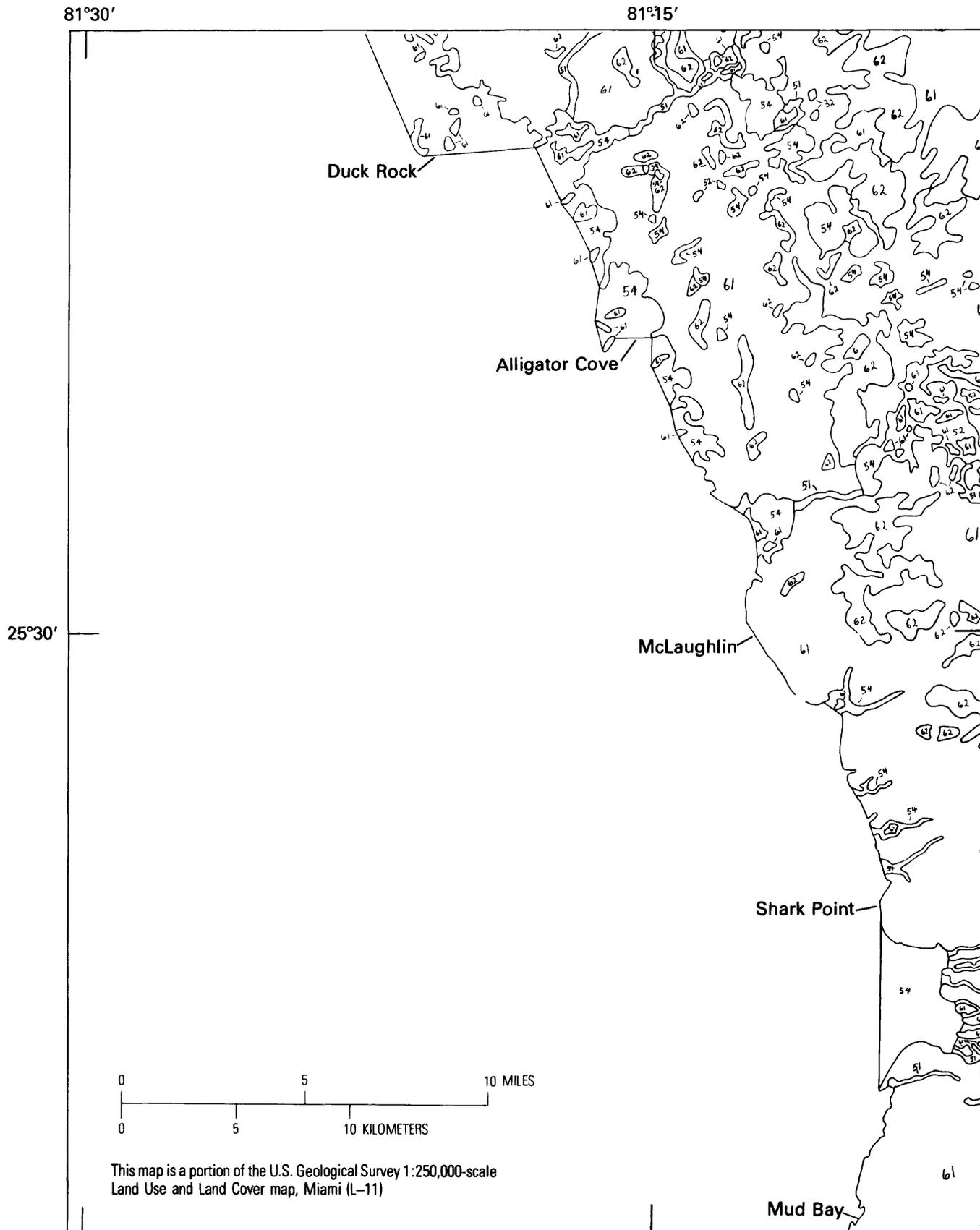


FIGURE 79. – Land use and land cover map of the coastal area near Alligator Cove, Fla., with associated barrier islands.

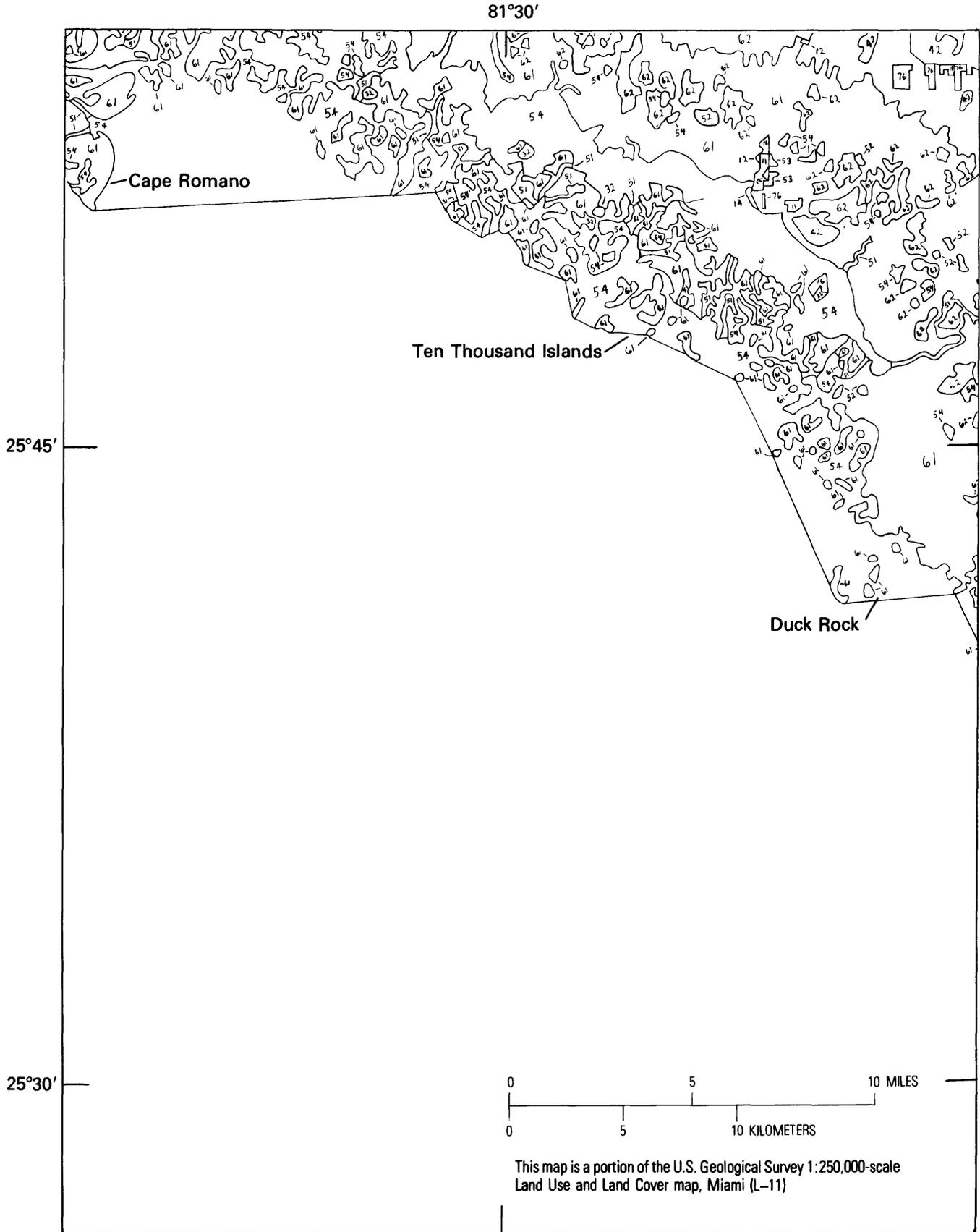


FIGURE 80. - Land use and land cover map of the coastal area near Everglades, Fla., with associated barrier islands.

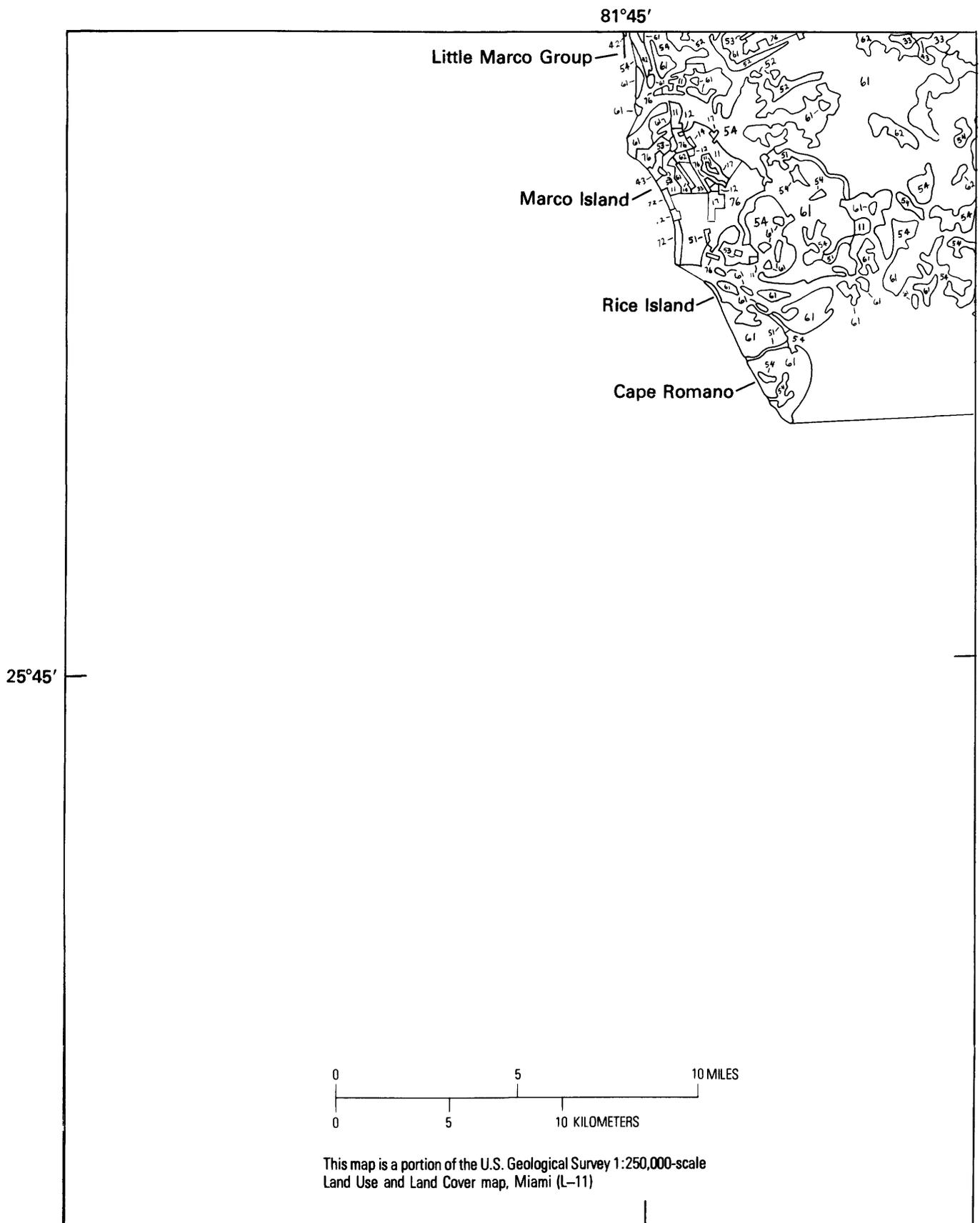


FIGURE 81. – Land use and land cover map of the coastal area near Marco, Fla., with associated barrier islands.

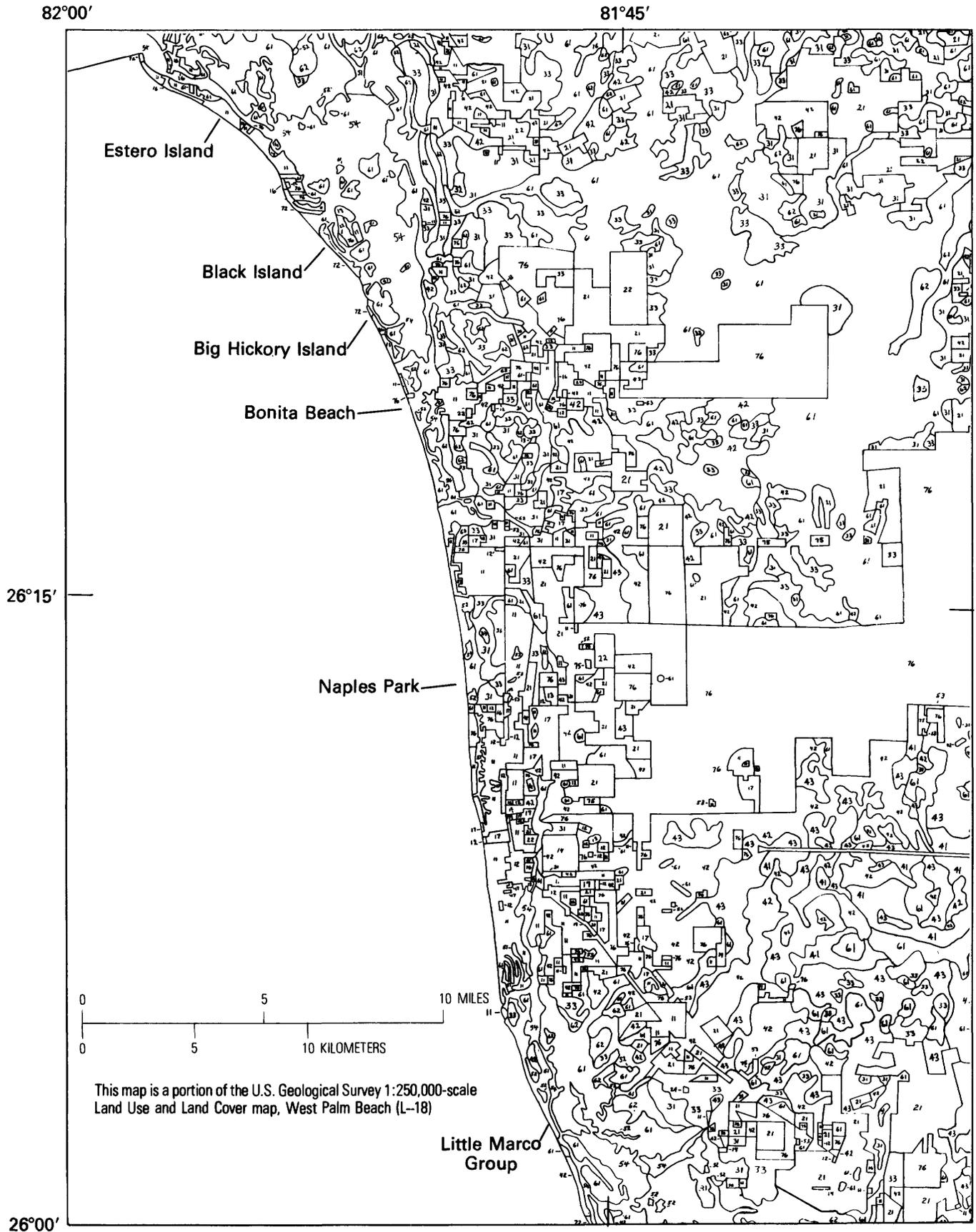


FIGURE 82. - Land use and land cover map of the coastal area near Naples, Fla., with associated barrier islands.

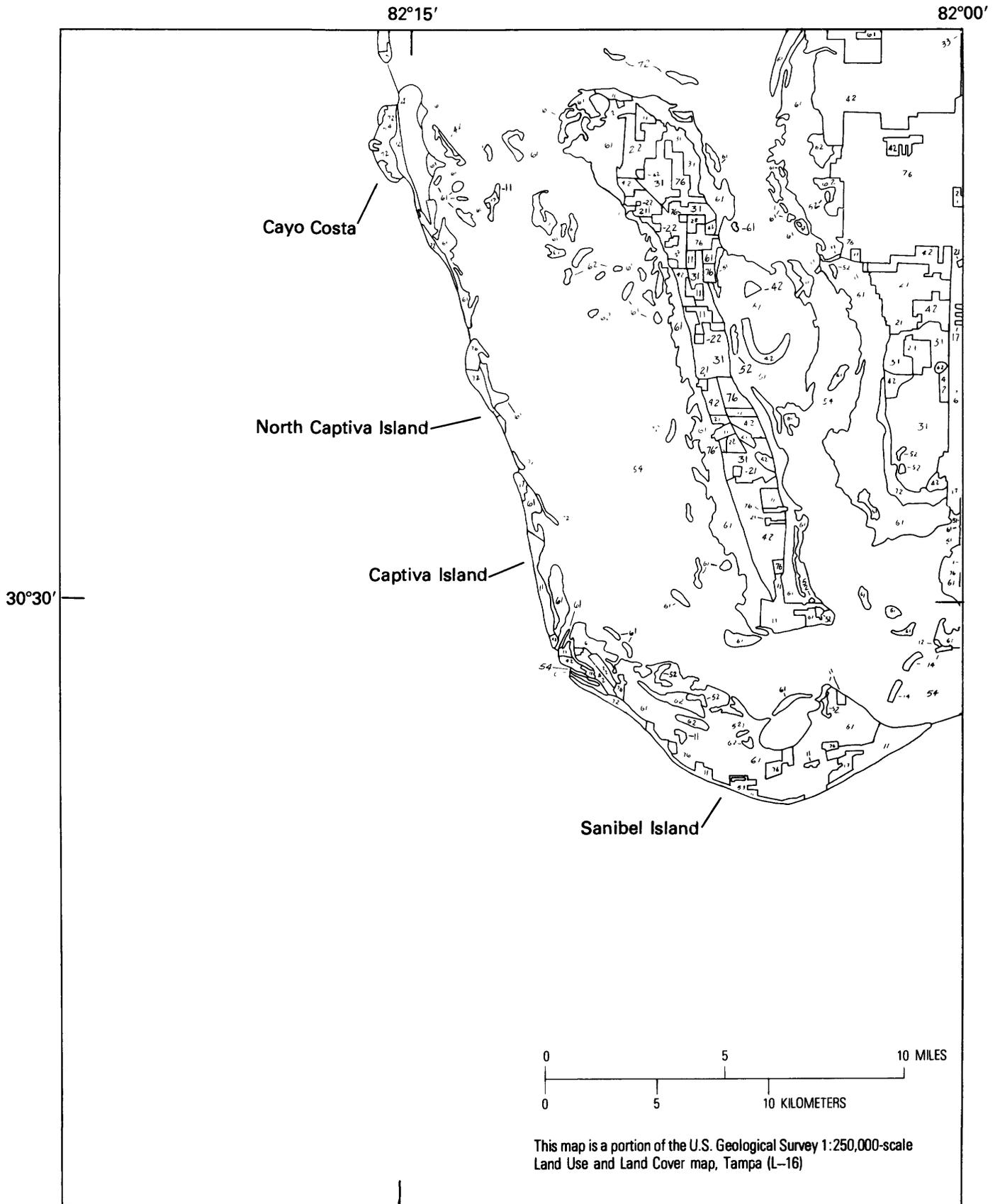


FIGURE 83. - Land use and land cover map of the coastal area near Fort Myers, Fla., with associated barrier islands.

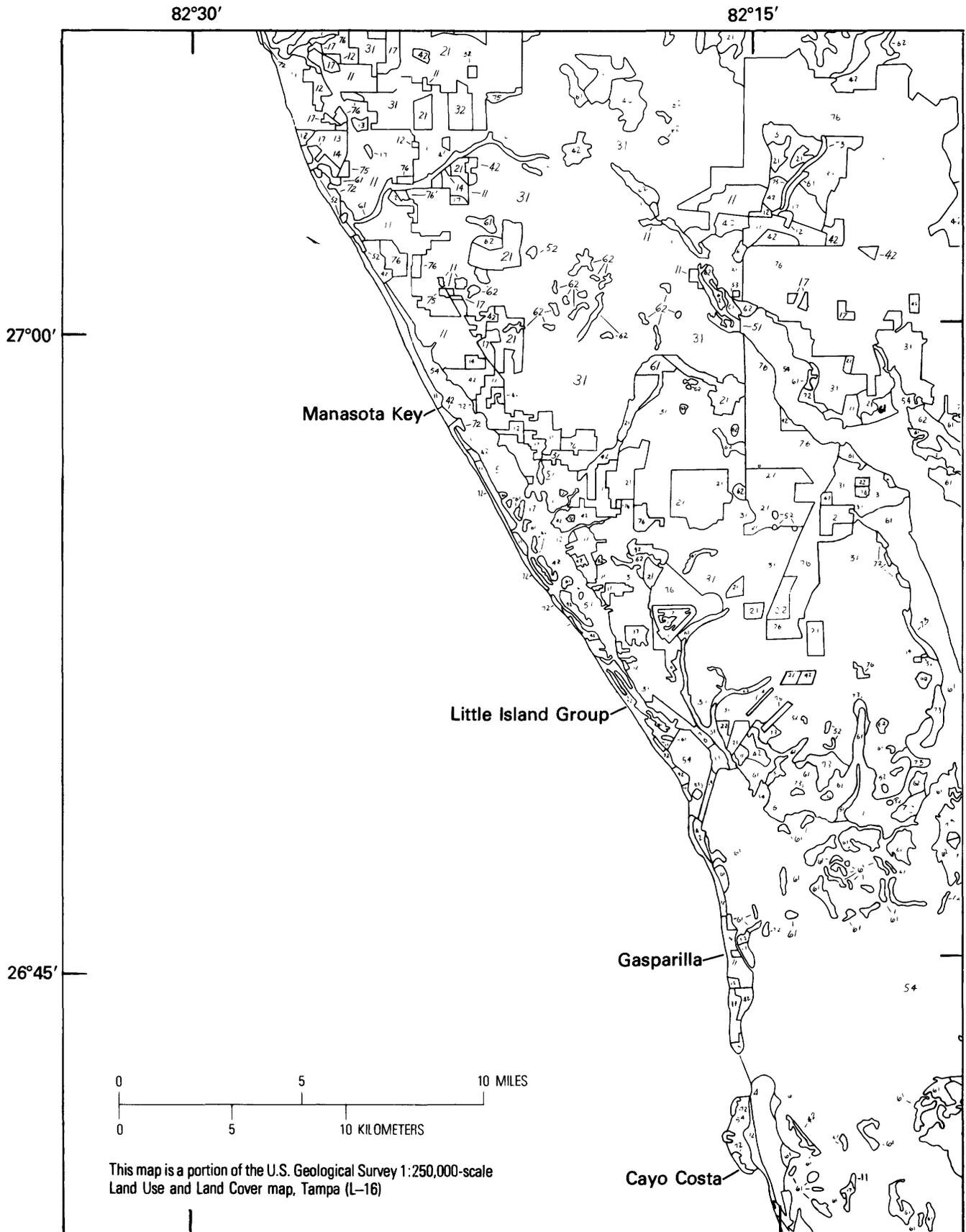


FIGURE 84. - Land use and land cover map of the coastal area near Venice, Fla., with associated barrier islands.

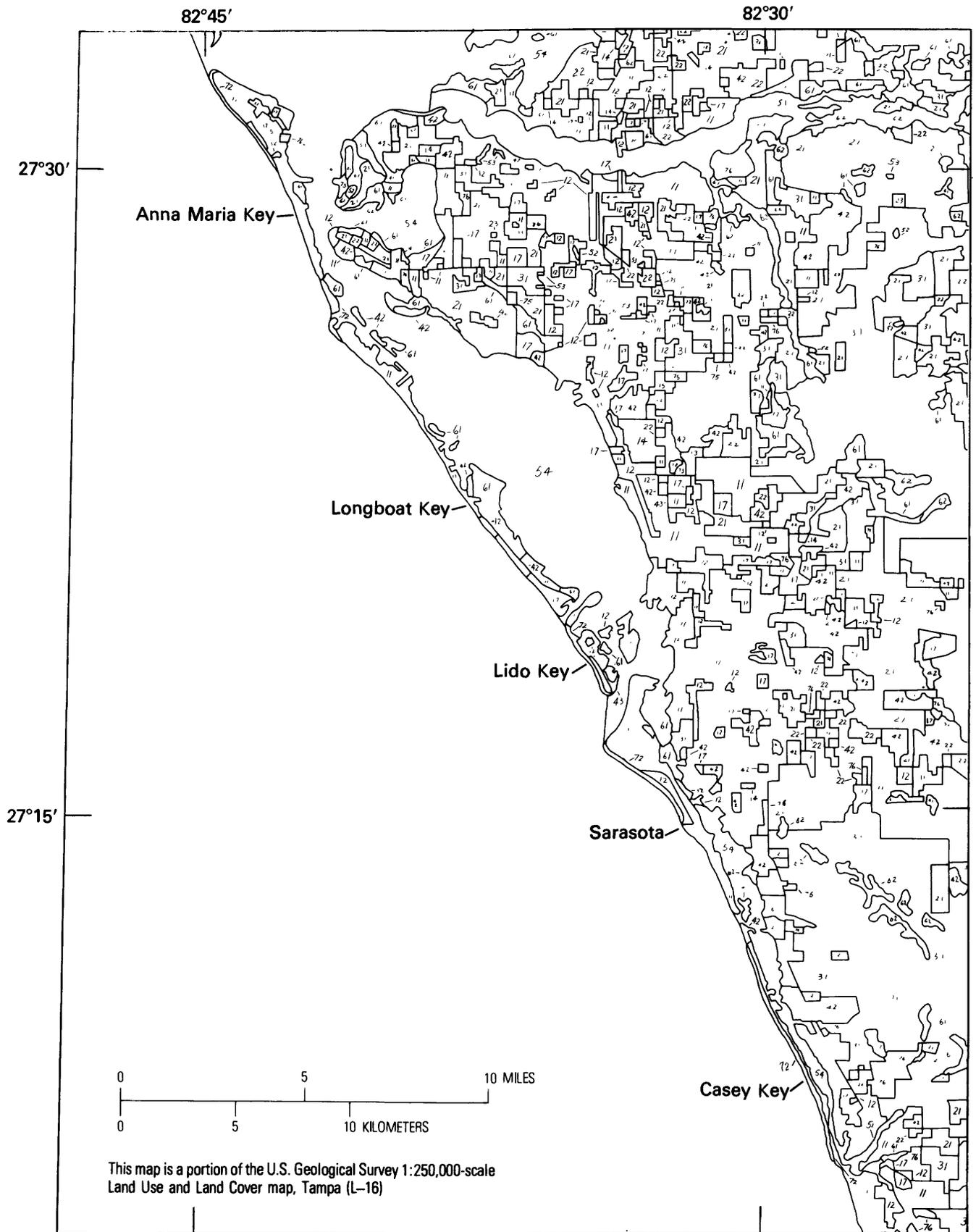


FIGURE 85.—Land use and land cover map of the coastal area near Sarasota, Fla., with associated barrier islands.

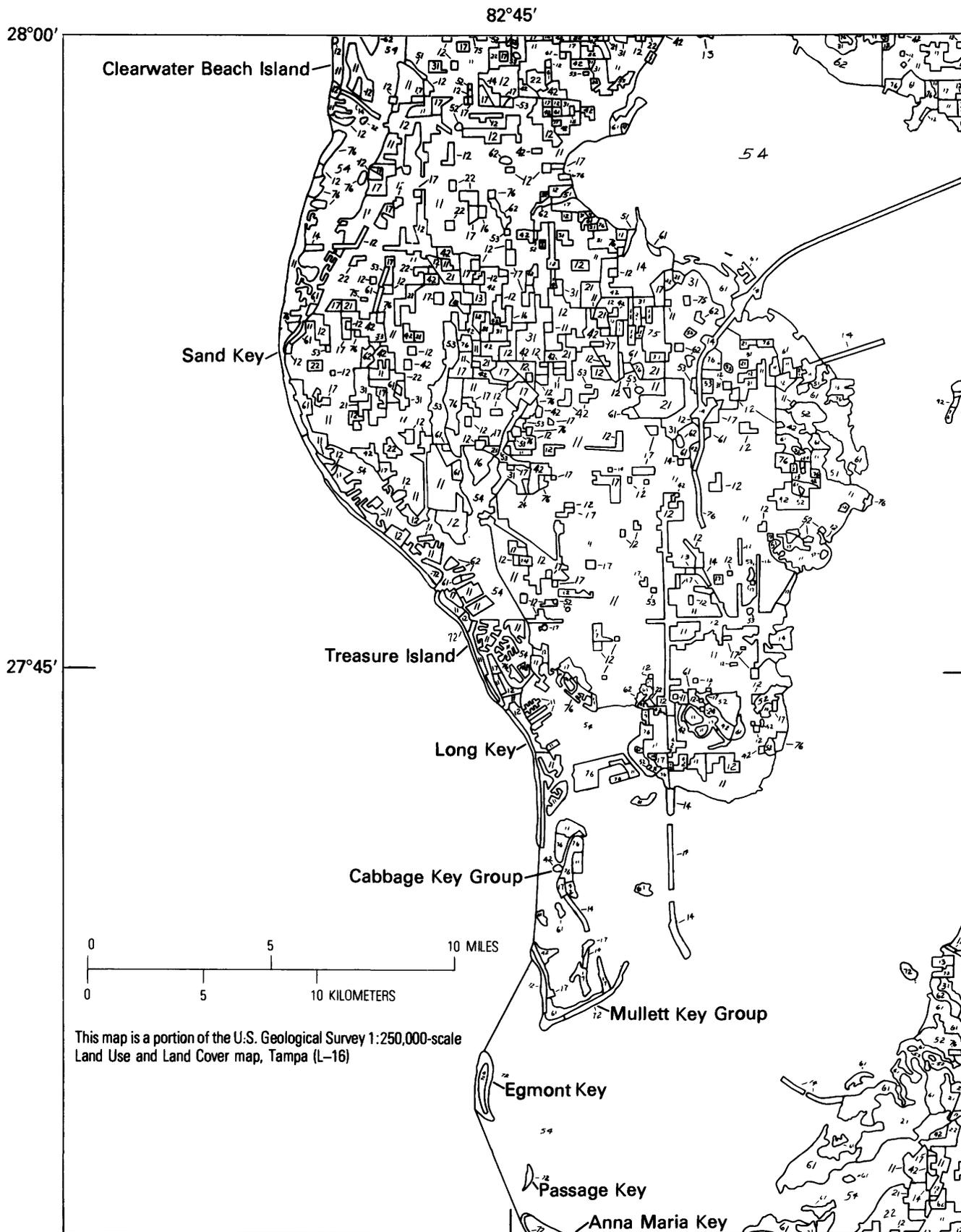


FIGURE 86. - Land use and land cover map of the coastal area near St. Petersburg, Fla., with associated barrier islands.

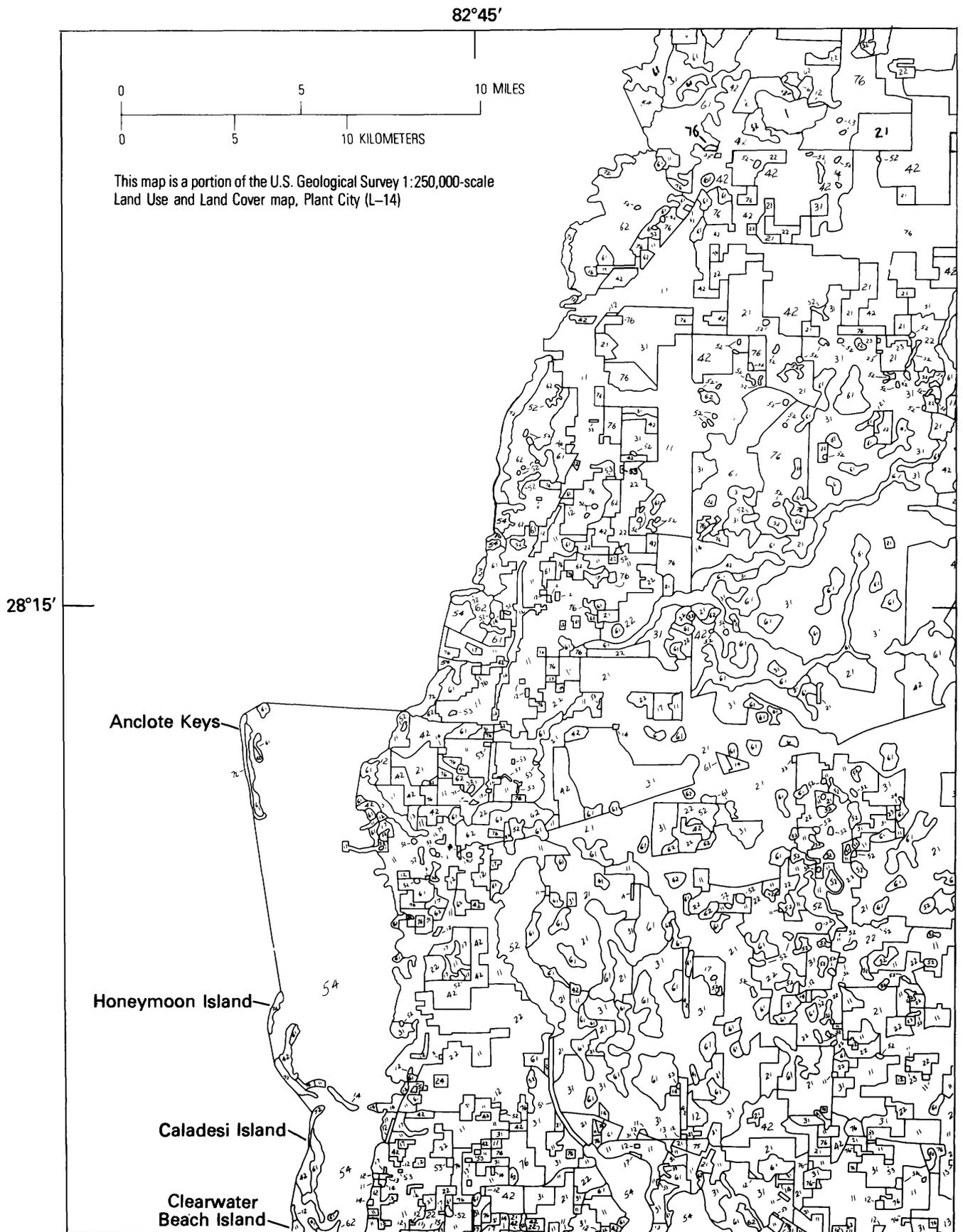


FIGURE 87.—Land use and land cover map of the coastal area near Tarpon Springs, Fla., with associated barrier islands.





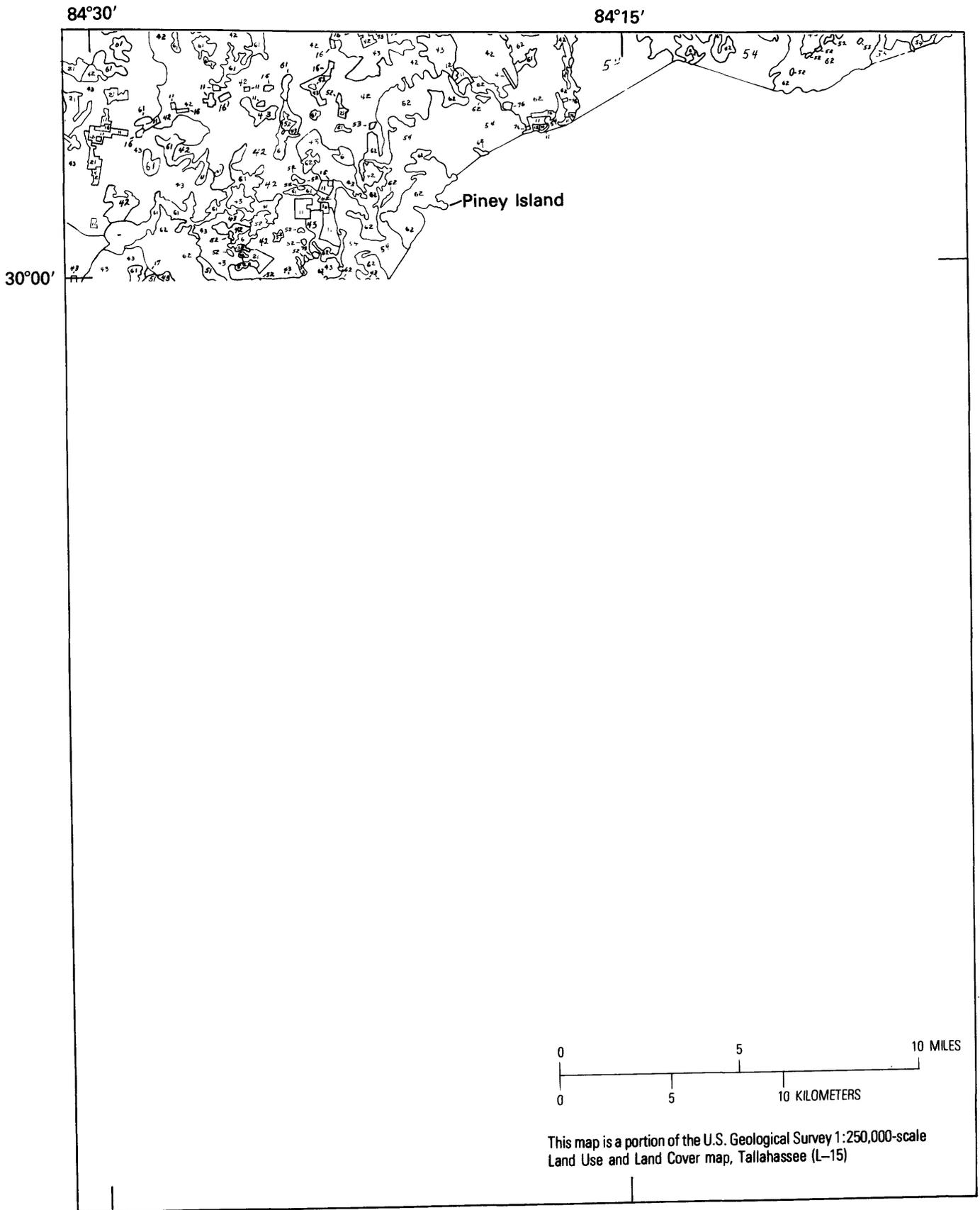


FIGURE 90. - Land use and land cover map of the coastal area near Panacea, Fla., with associated barrier islands.

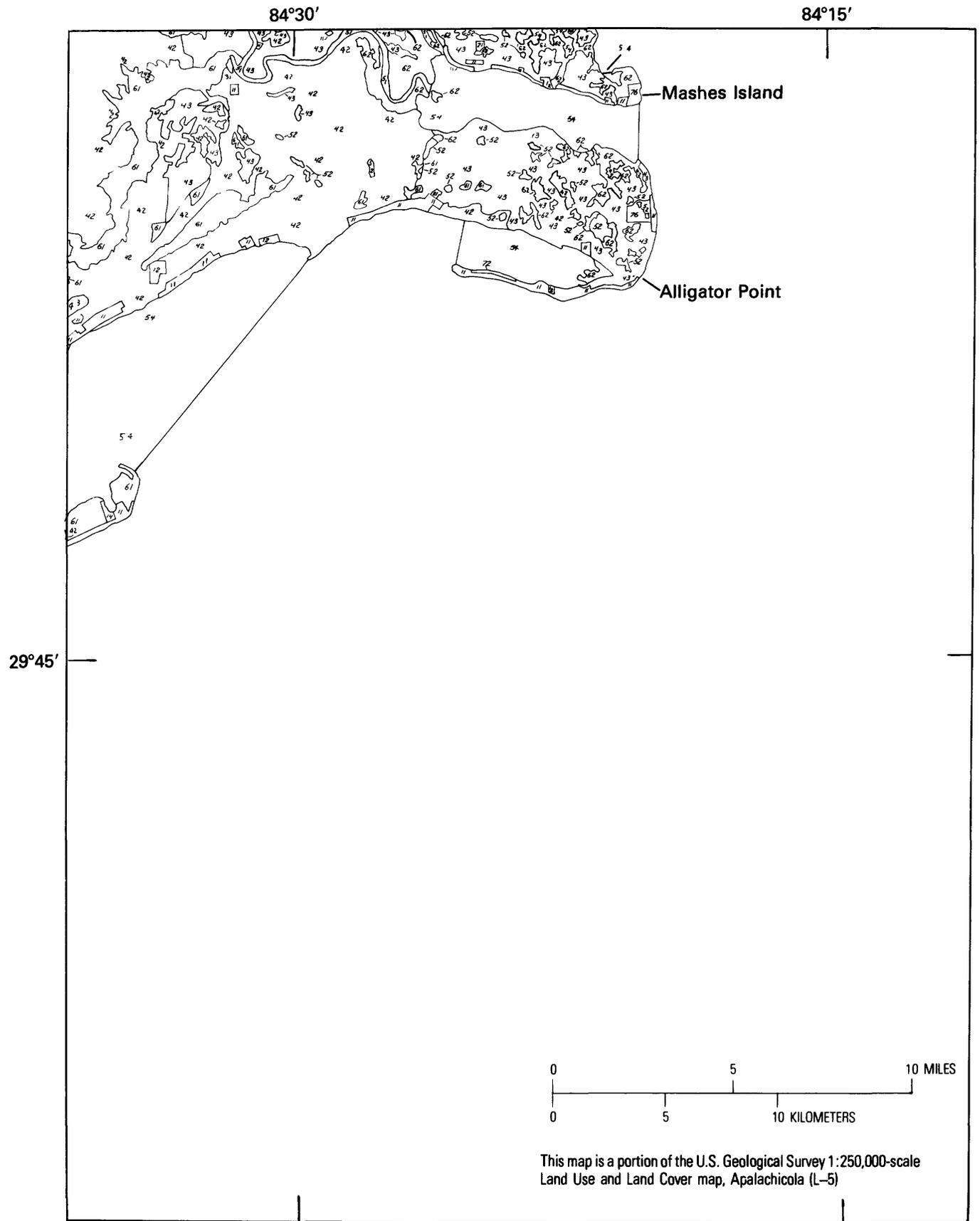


FIGURE 91. - Land use and land cover map of the coastal area near Saint Teresa, Fla., with associated barrier islands.

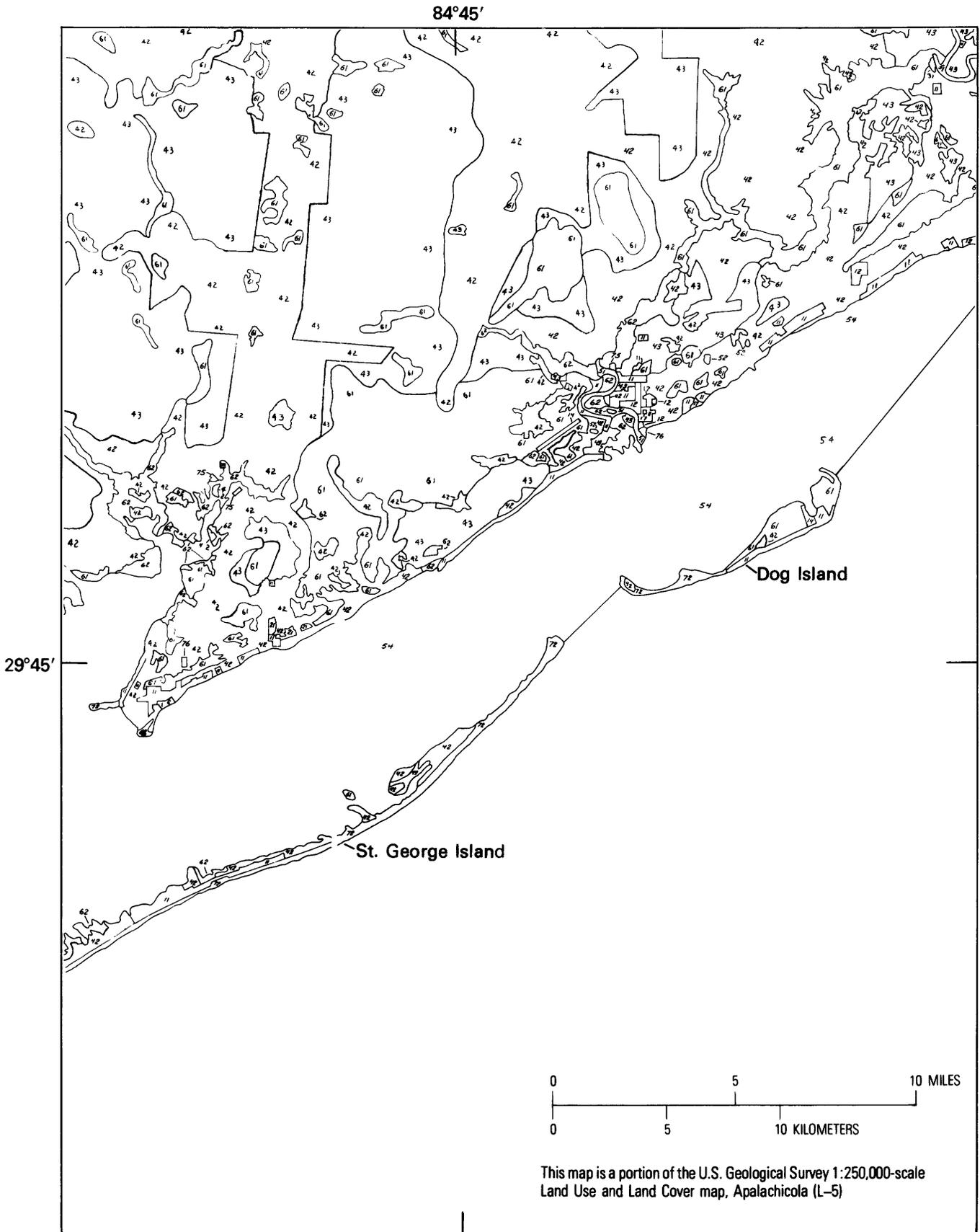


FIGURE 92. - Land use and land cover map of the coastal area near Carrabelle, Fla., with associated barrier islands.

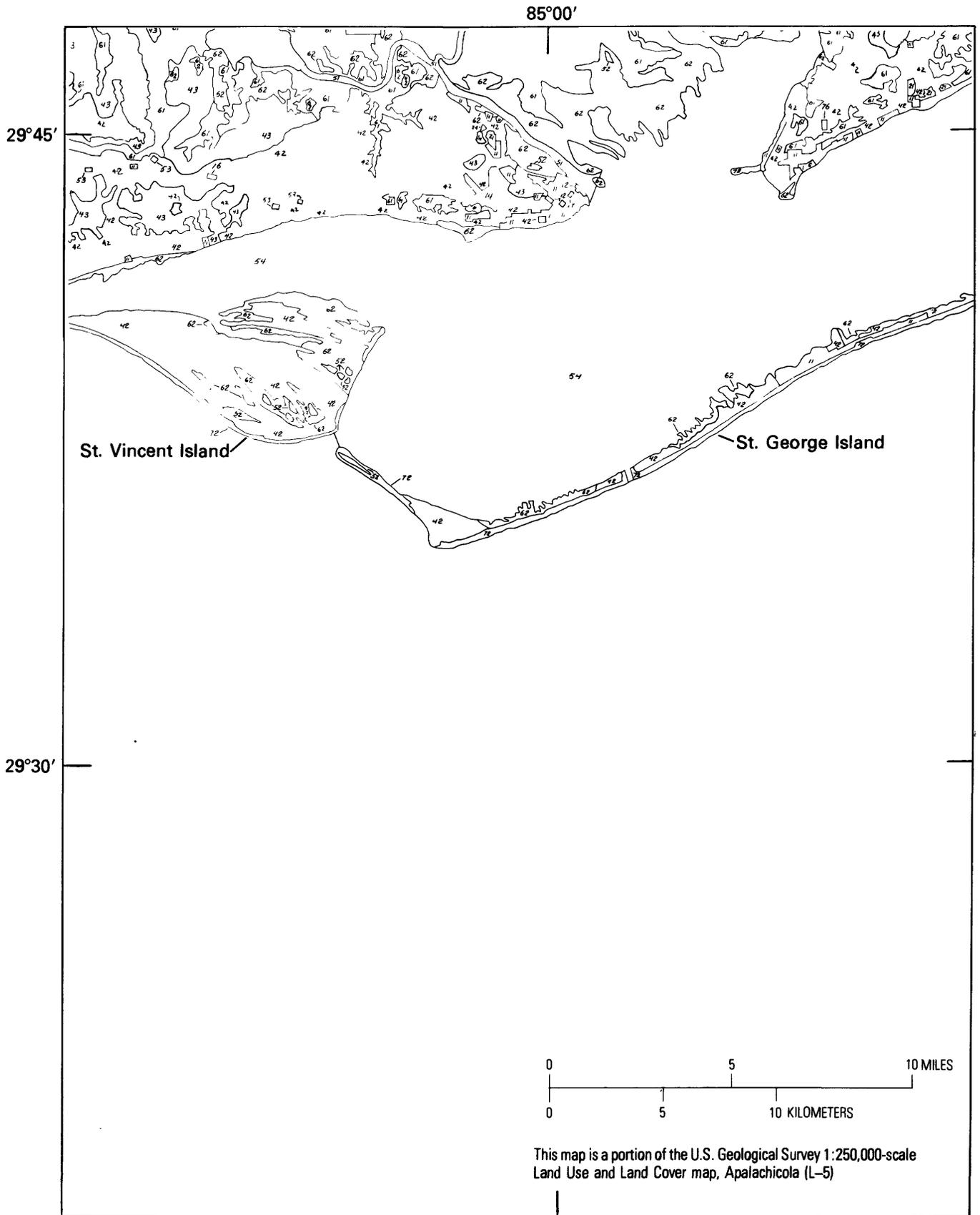


FIGURE 93. - Land use and land cover map of the coastal area near Apalachicola, Fla., with associated barrier islands.

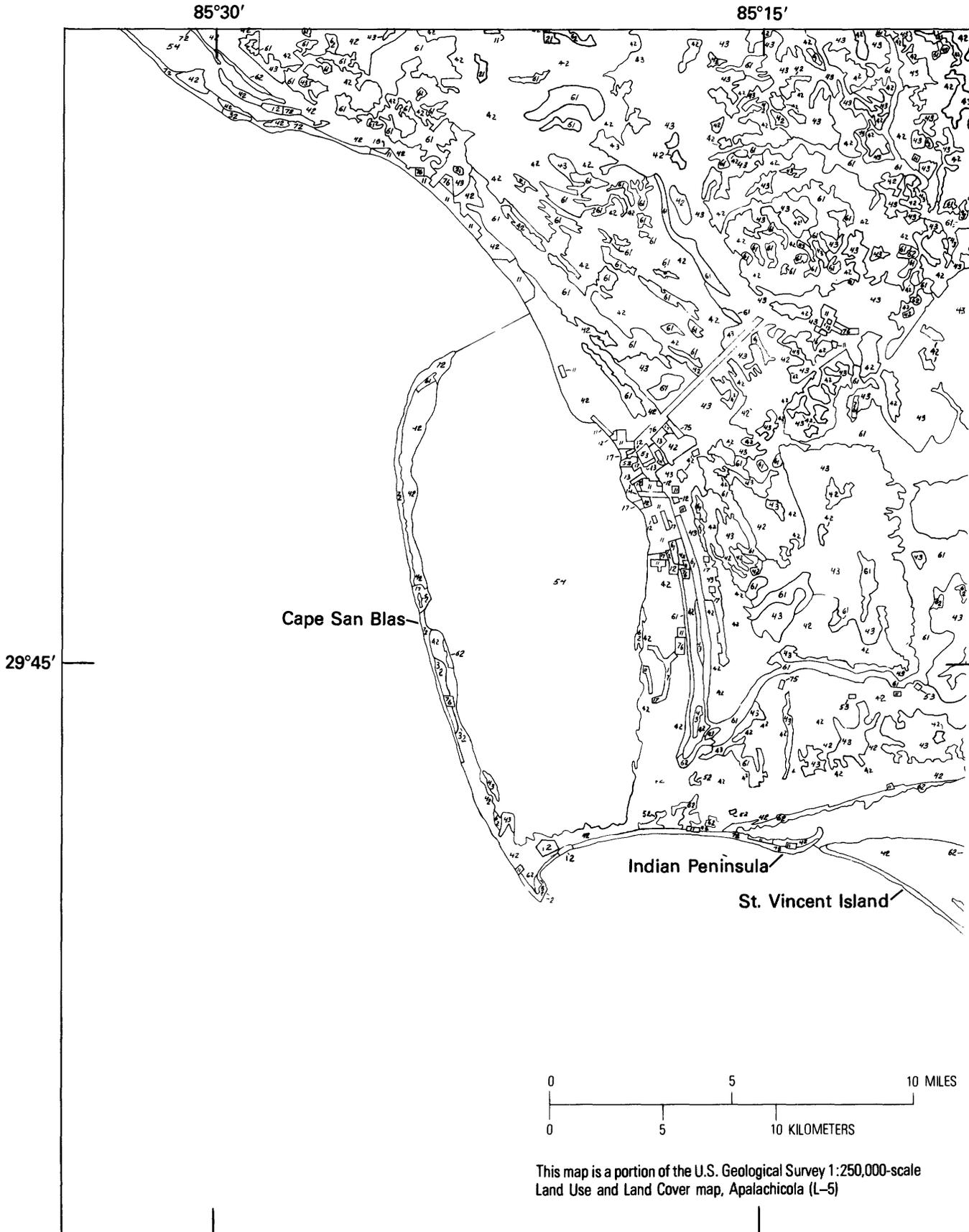


FIGURE 94. — Land use and land cover map of the coastal area near Port St. Joe, Fla., with associated barrier islands.

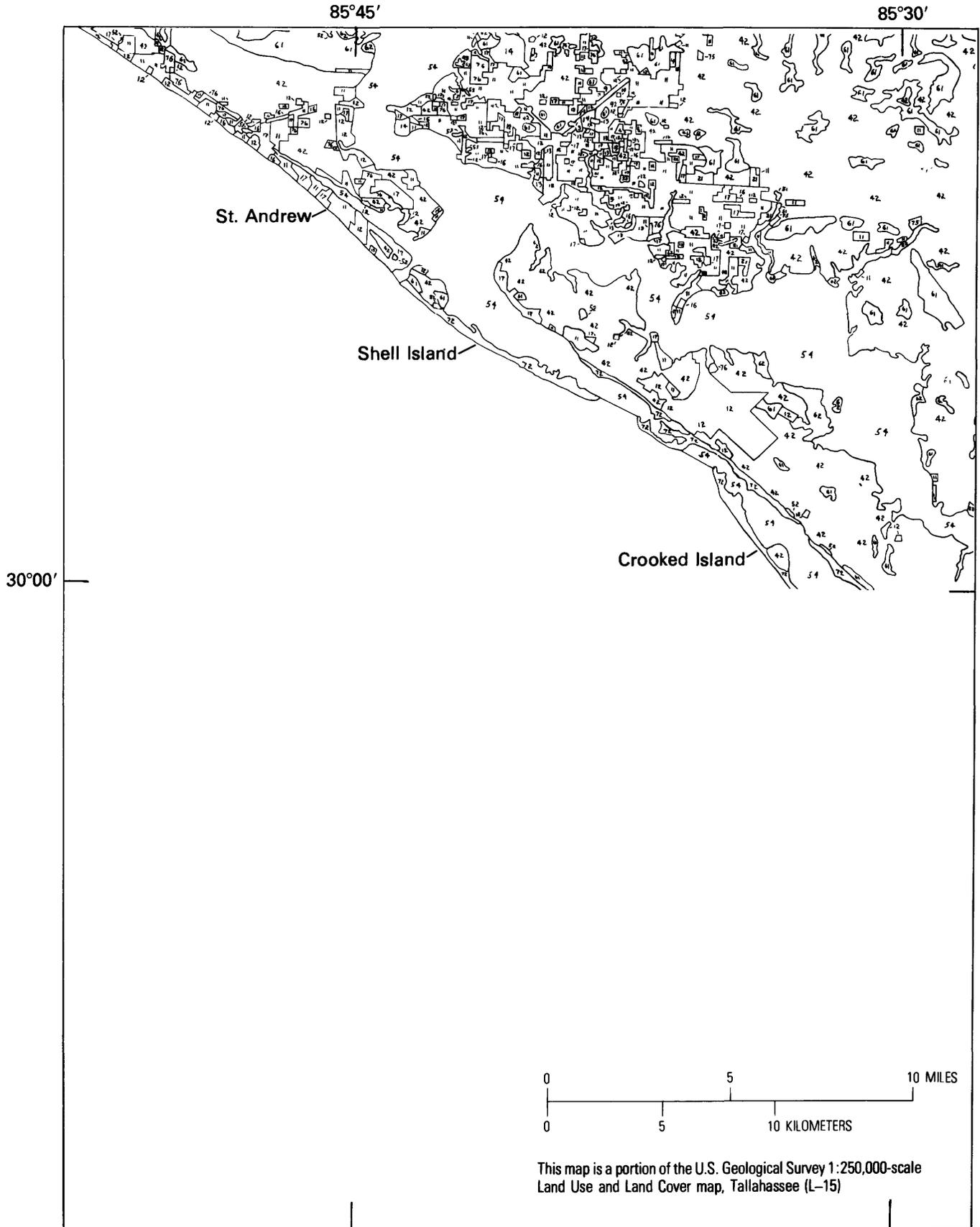


FIGURE 95. - Land use and land cover map of the coastal area near Panama City, Fla., with associated barrier islands.

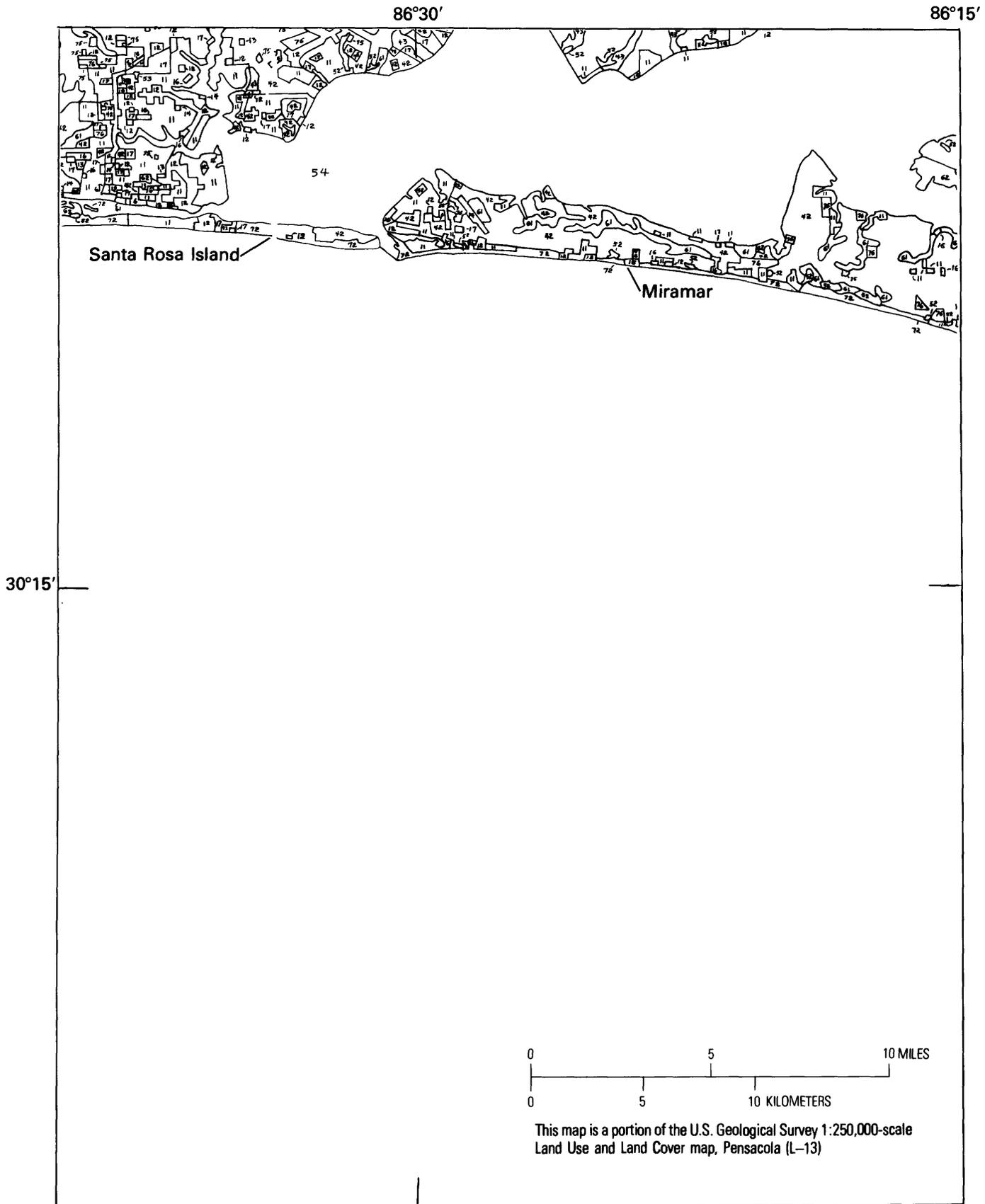


FIGURE 96. - Land use and land cover map of the coastal area near Fort Walton Beach, Fla., with associated barrier islands.

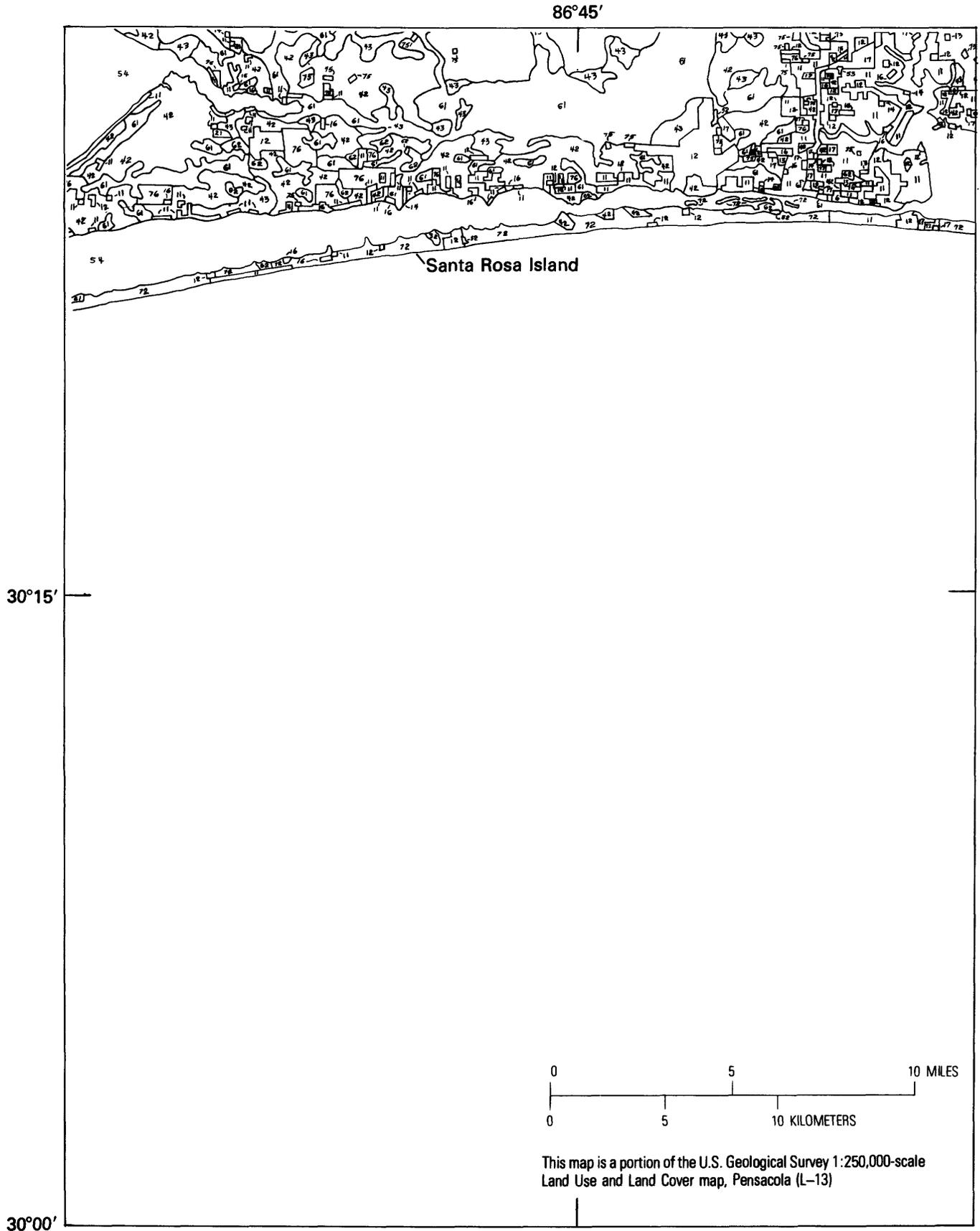


FIGURE 97. - Land use and land cover map of the coastal area near Mary Esther, Fla., with associated barrier islands.

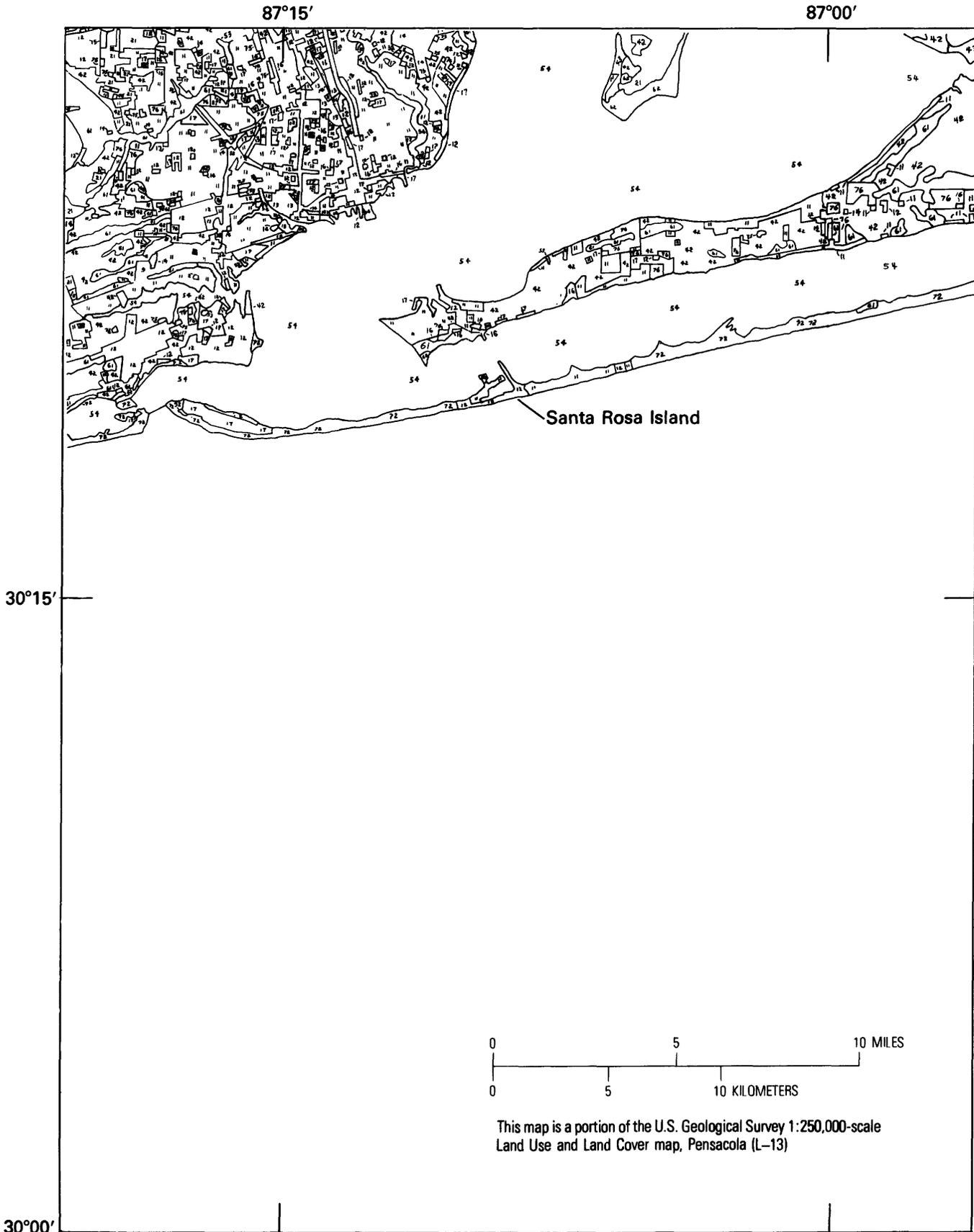


FIGURE 98.—Land use and land cover map of the coastal area near Pensacola, Fla., with associated barrier islands.

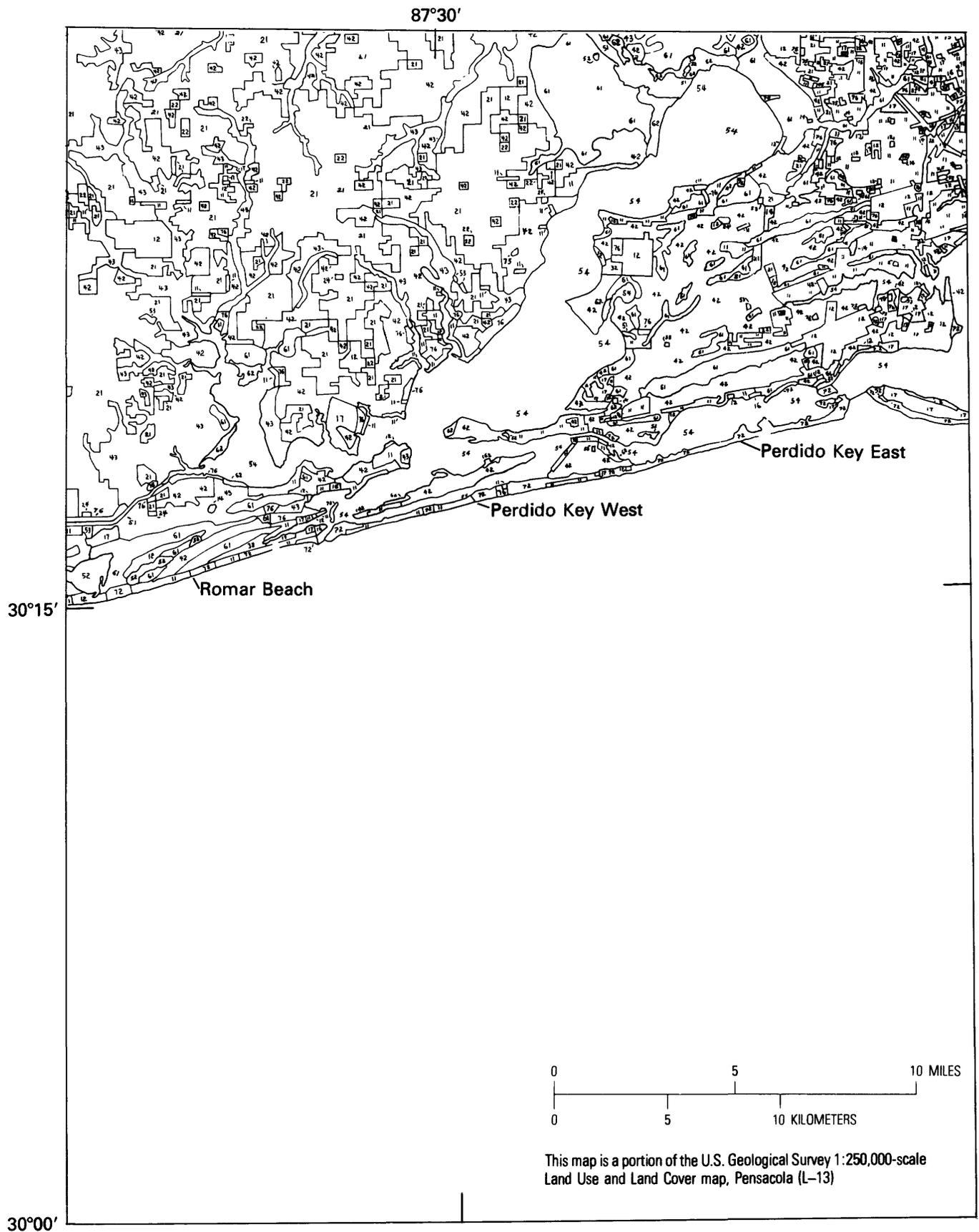


FIGURE 99. - Land use and land cover map of the coastal area near Warrington, Fla., with associated barrier islands.

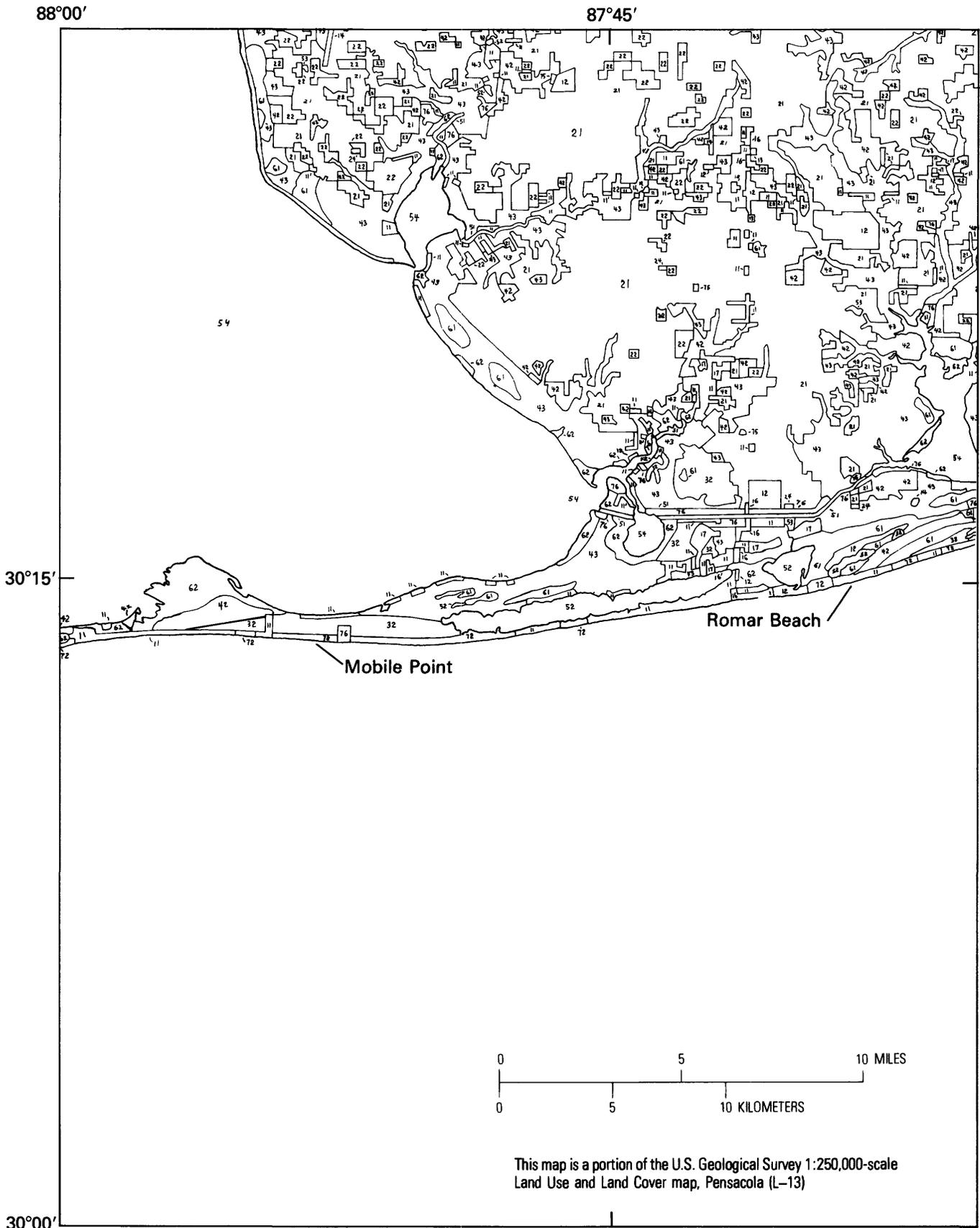


FIGURE 100. - Land use and land cover map of the coastal area near Gulf Shores, Ala., with associated barrier islands.

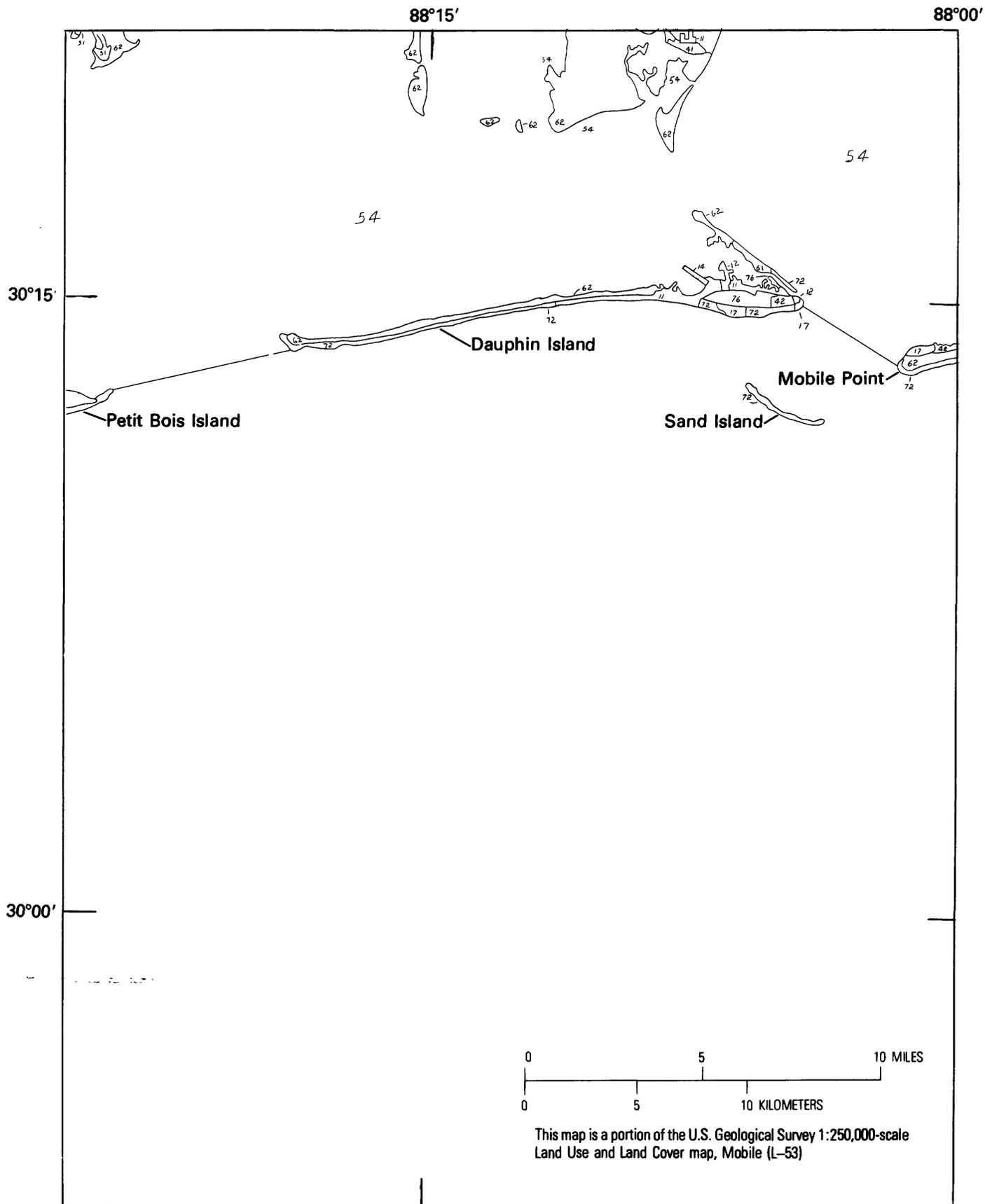


FIGURE 101.—Land use and land cover map of the coastal area near Dauphin Island, Ala., with associated barrier islands.

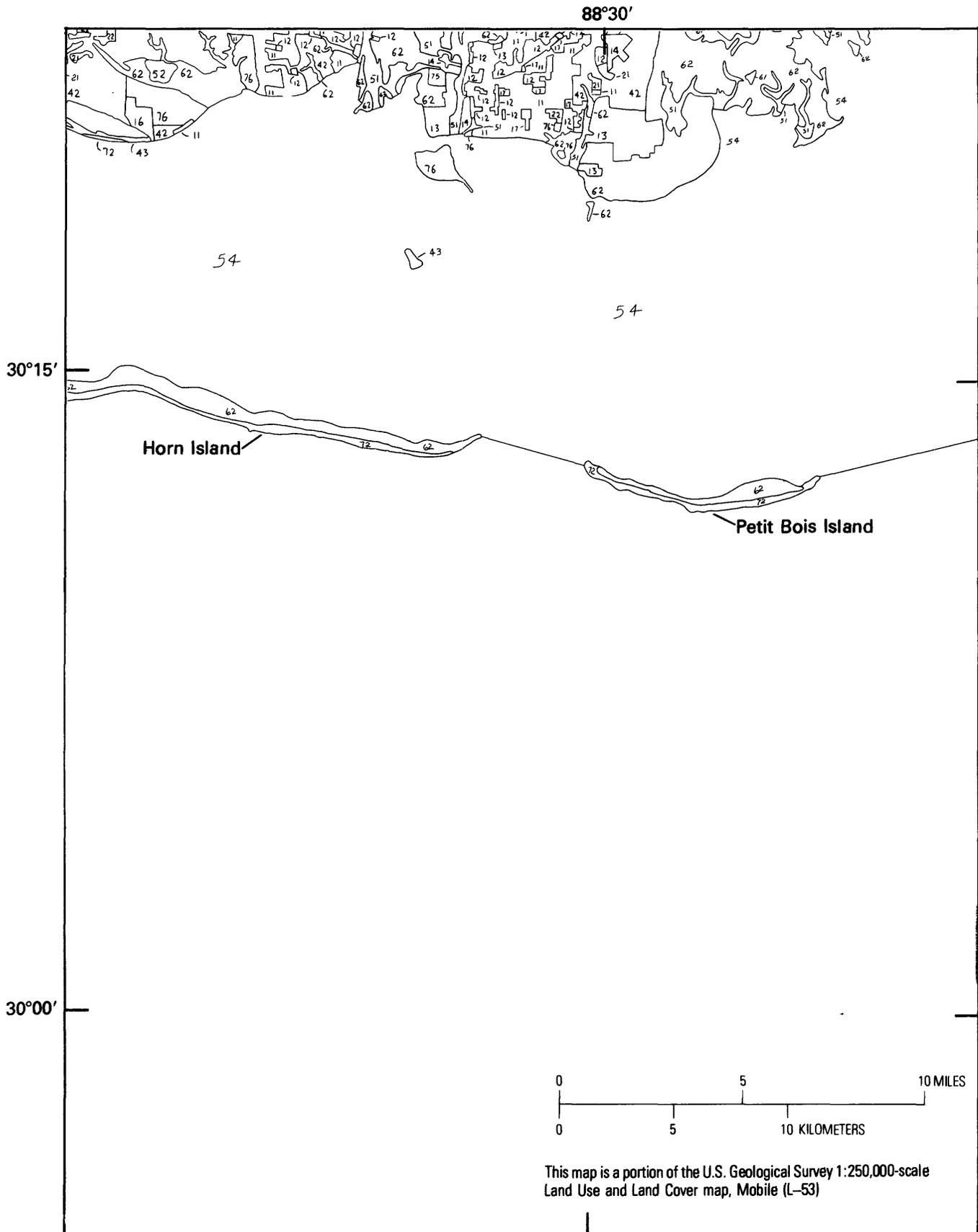


FIGURE 102. - Land use and land cover map of the coastal area near Pascagoula, Miss., with associated barrier islands.

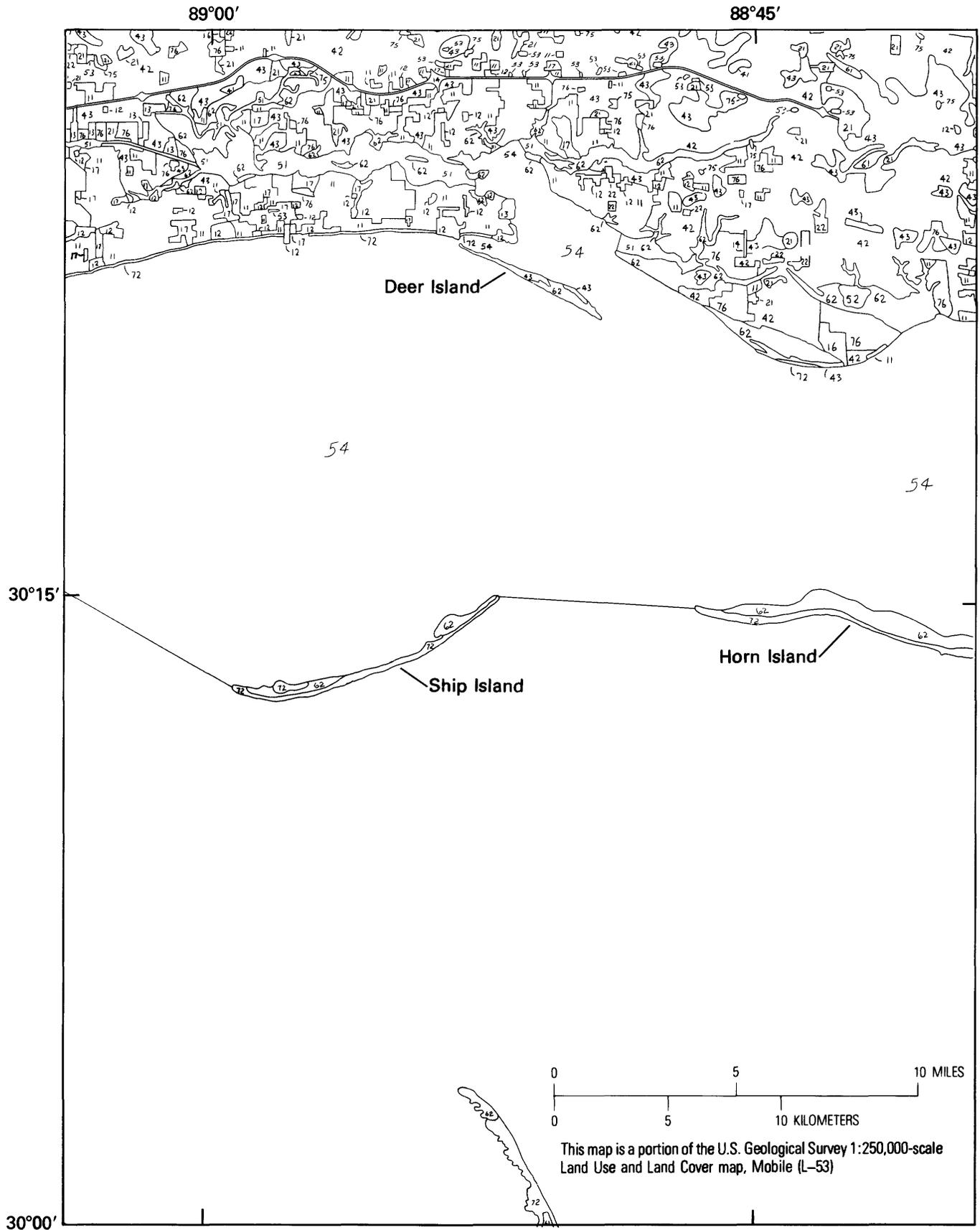


FIGURE 103. – Land use and land cover map of the coastal area near Biloxi, Miss., with associated barrier islands.

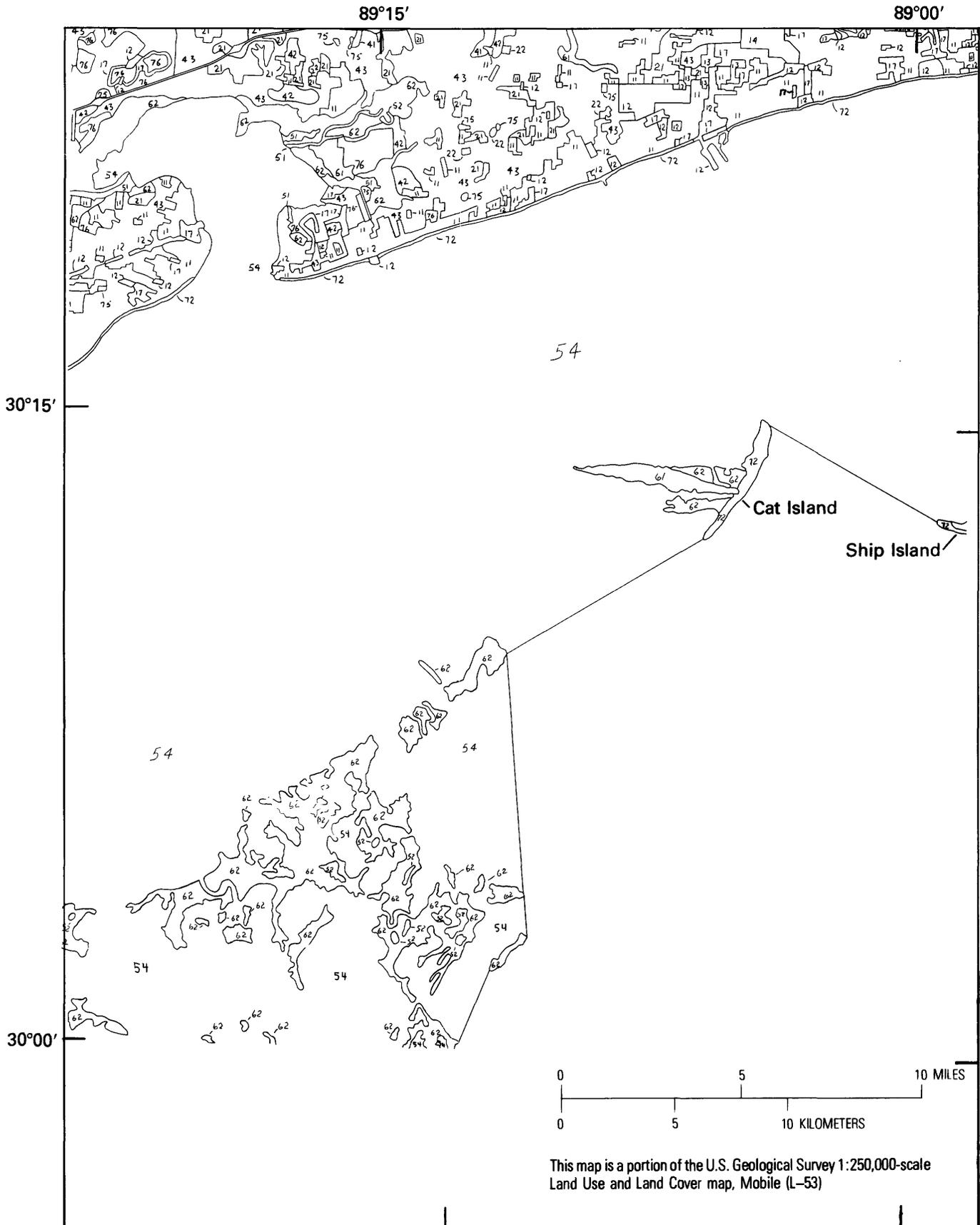


FIGURE 104. - Land use and land cover map of the coastal area near Gulfport, Miss., with associated barrier islands.



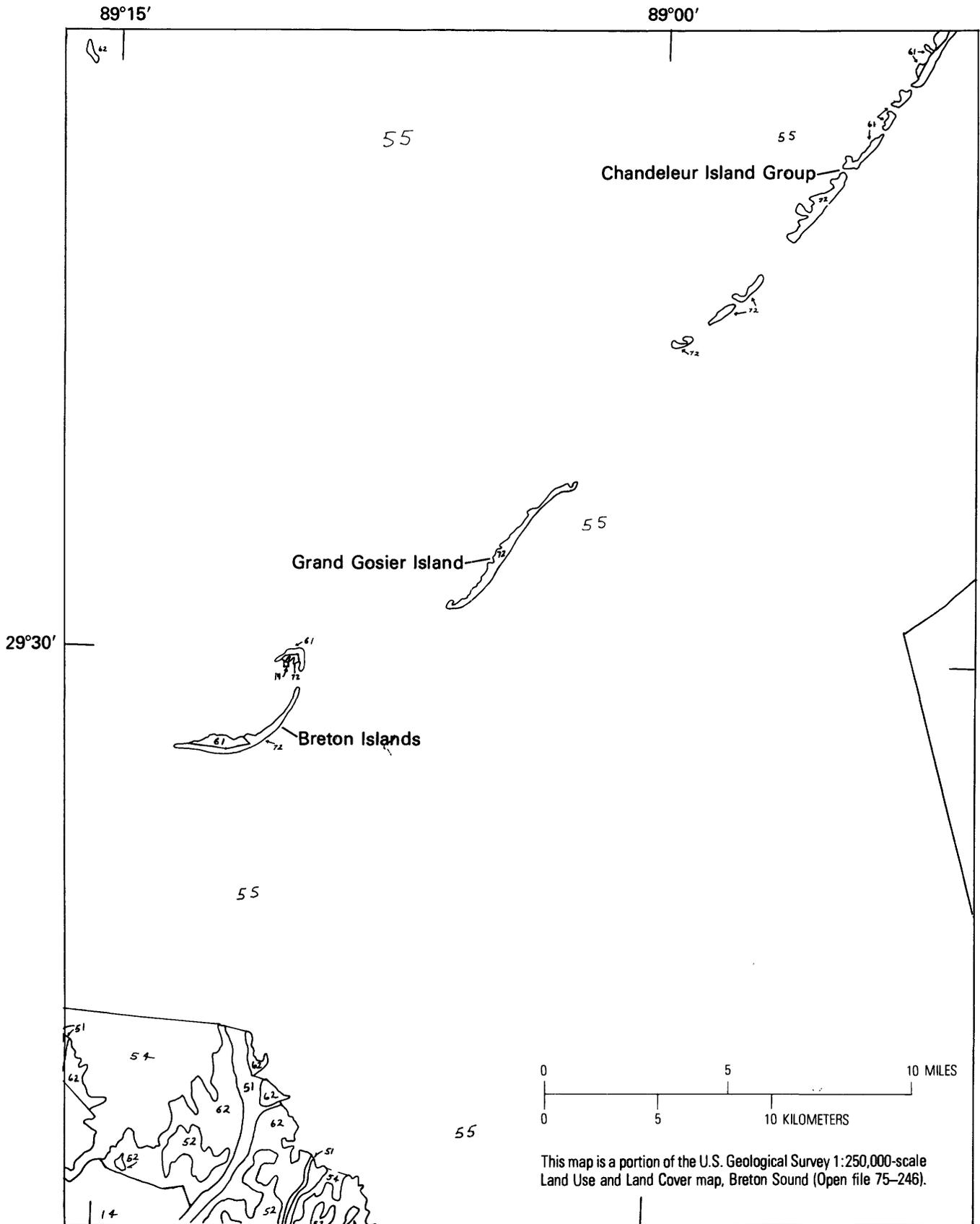


FIGURE 106. — Land use and land cover map of the coastal area near Breton Island, La., with associated barrier islands.

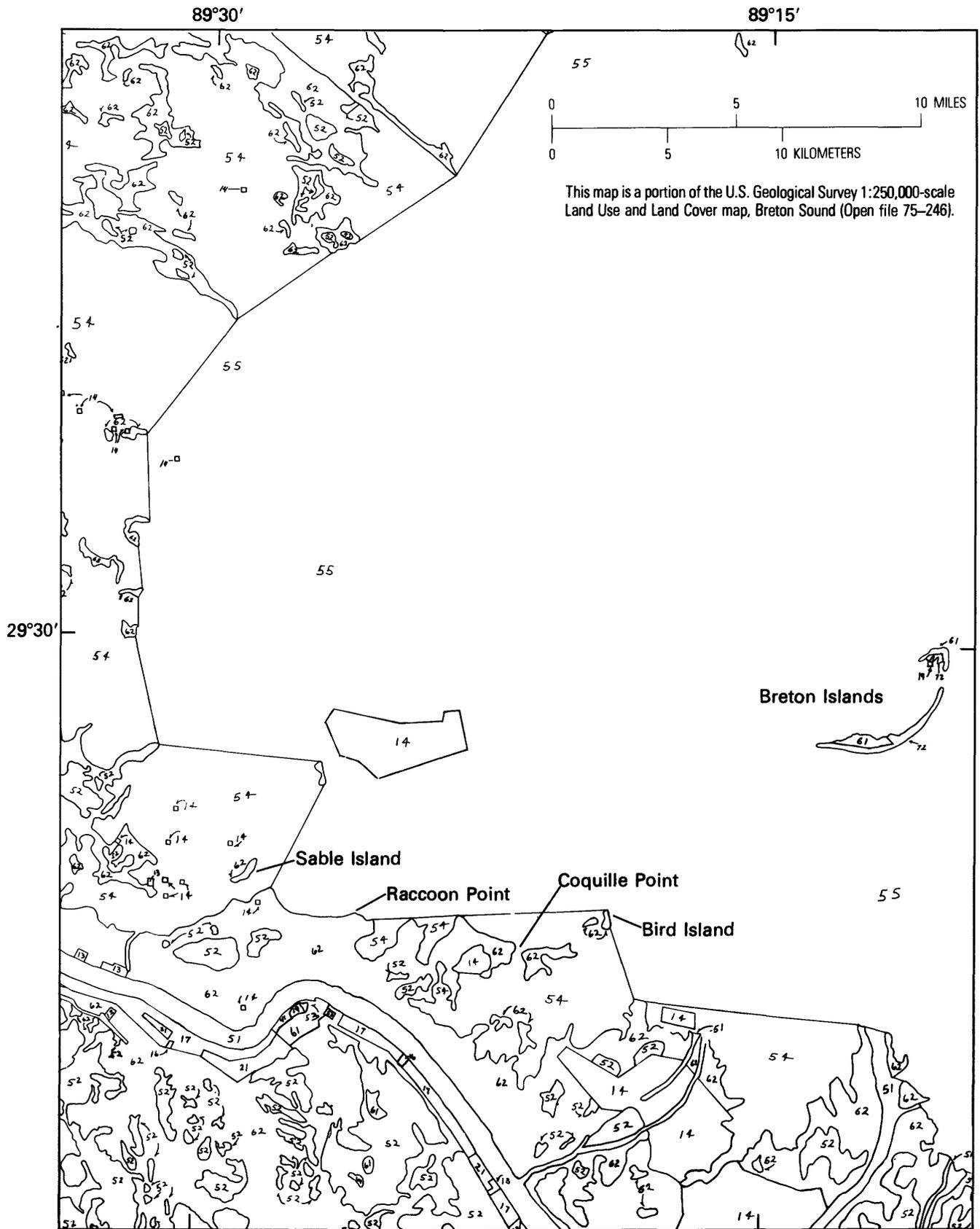


FIGURE 107. - Land use and land cover map of the coastal area near Venice, La., with associated barrier islands.

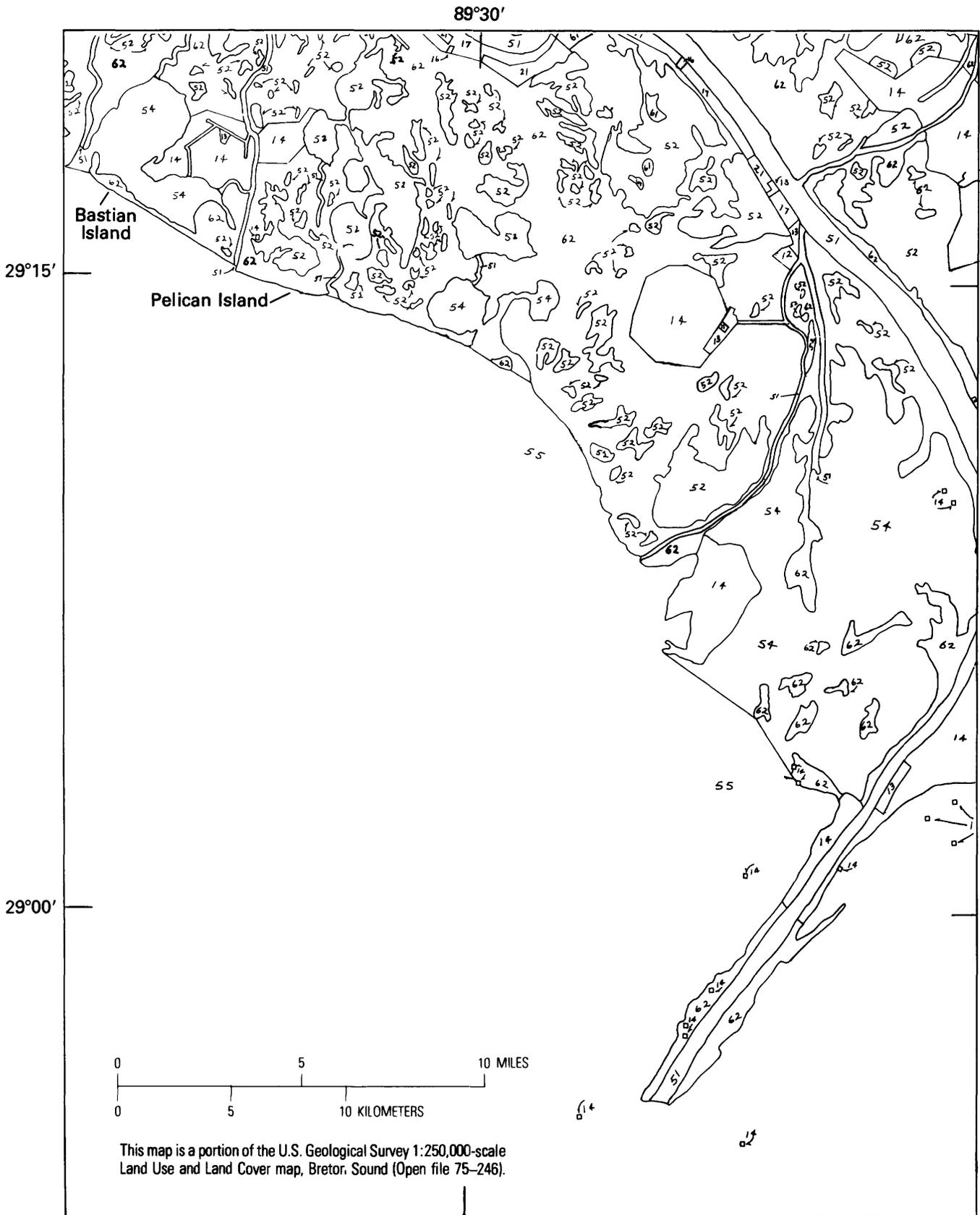


FIGURE 108. — Land use and land cover map of the coastal area near Pilottown, La., with associated barrier islands.

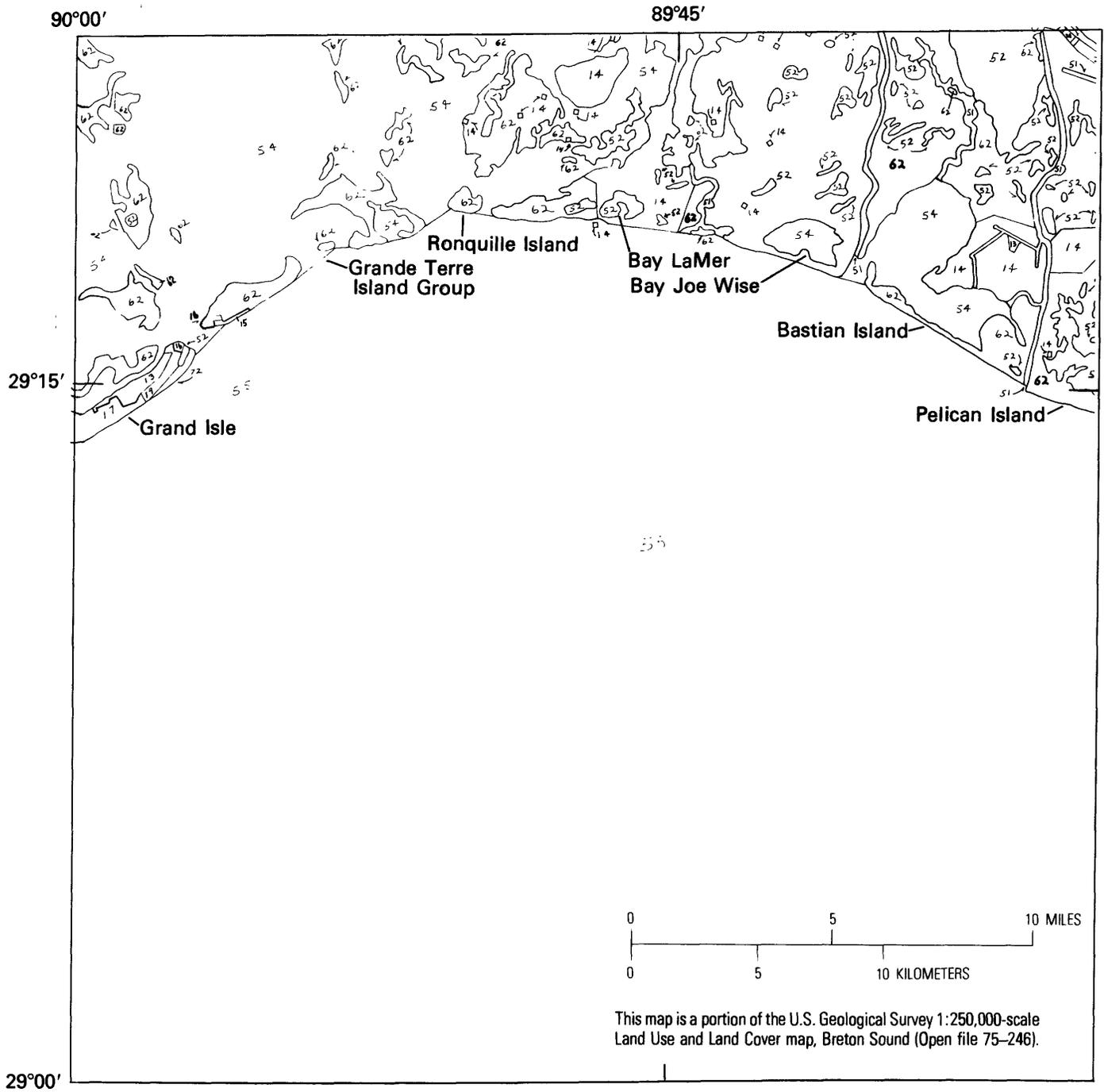


FIGURE 109. – Land use and land cover map of the coastal area near Grand Isle, La., with associated barrier islands.

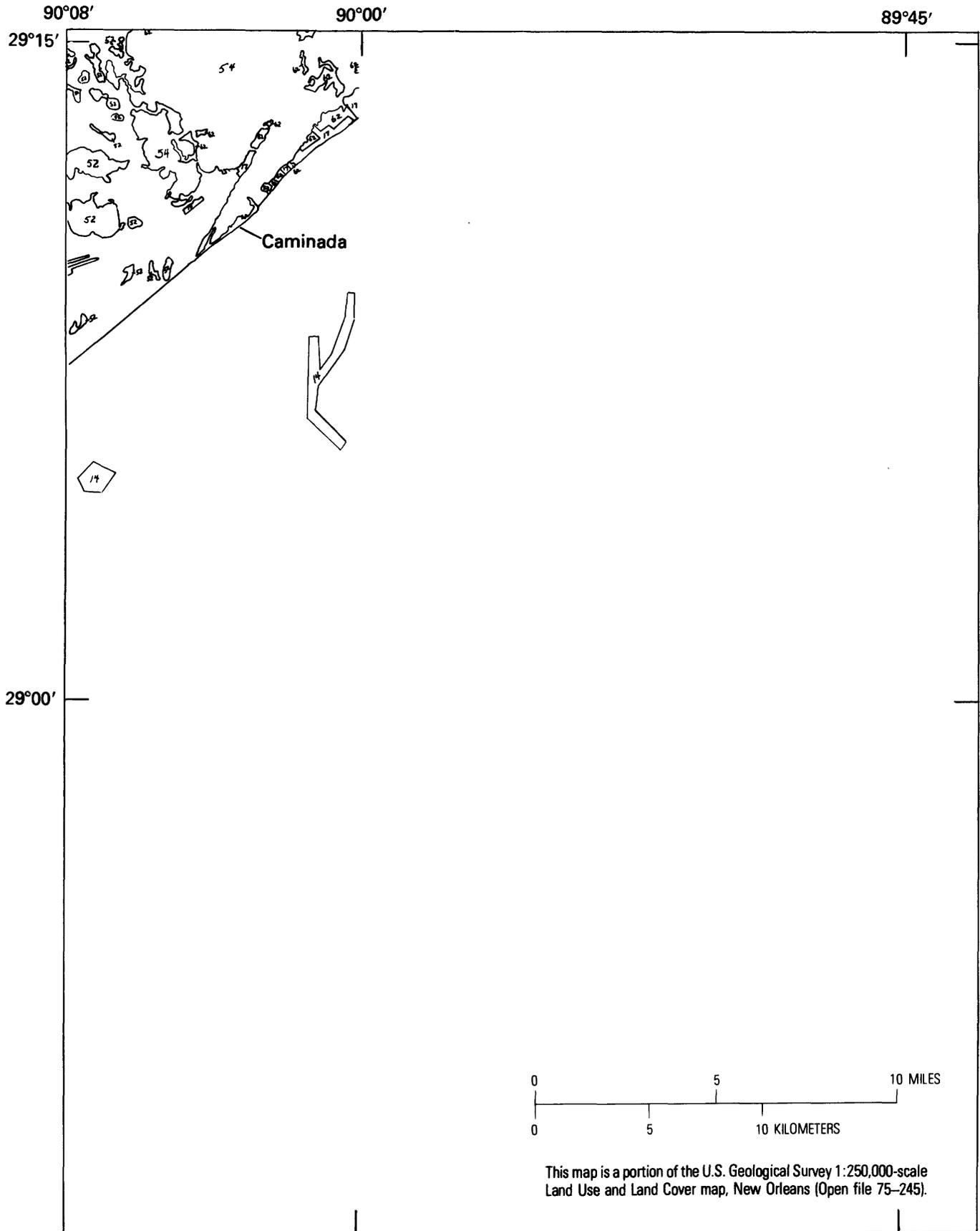


FIGURE 110. – Land use and land cover map of the coastal area near Caminada Pass, La., with associated barrier islands.

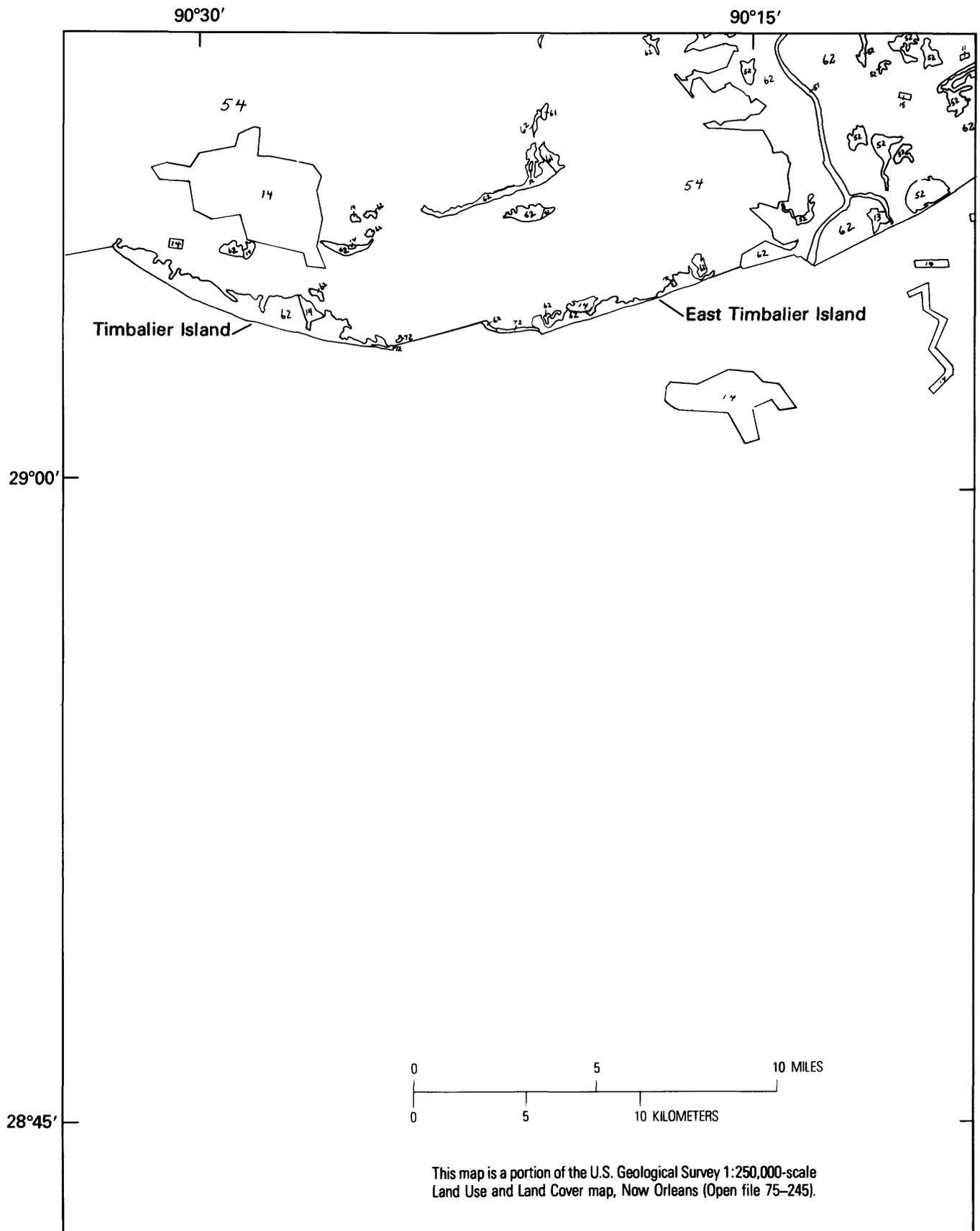


FIGURE 111. – Land use and land cover map of the coastal area near Leeville, La., with associated barrier islands.

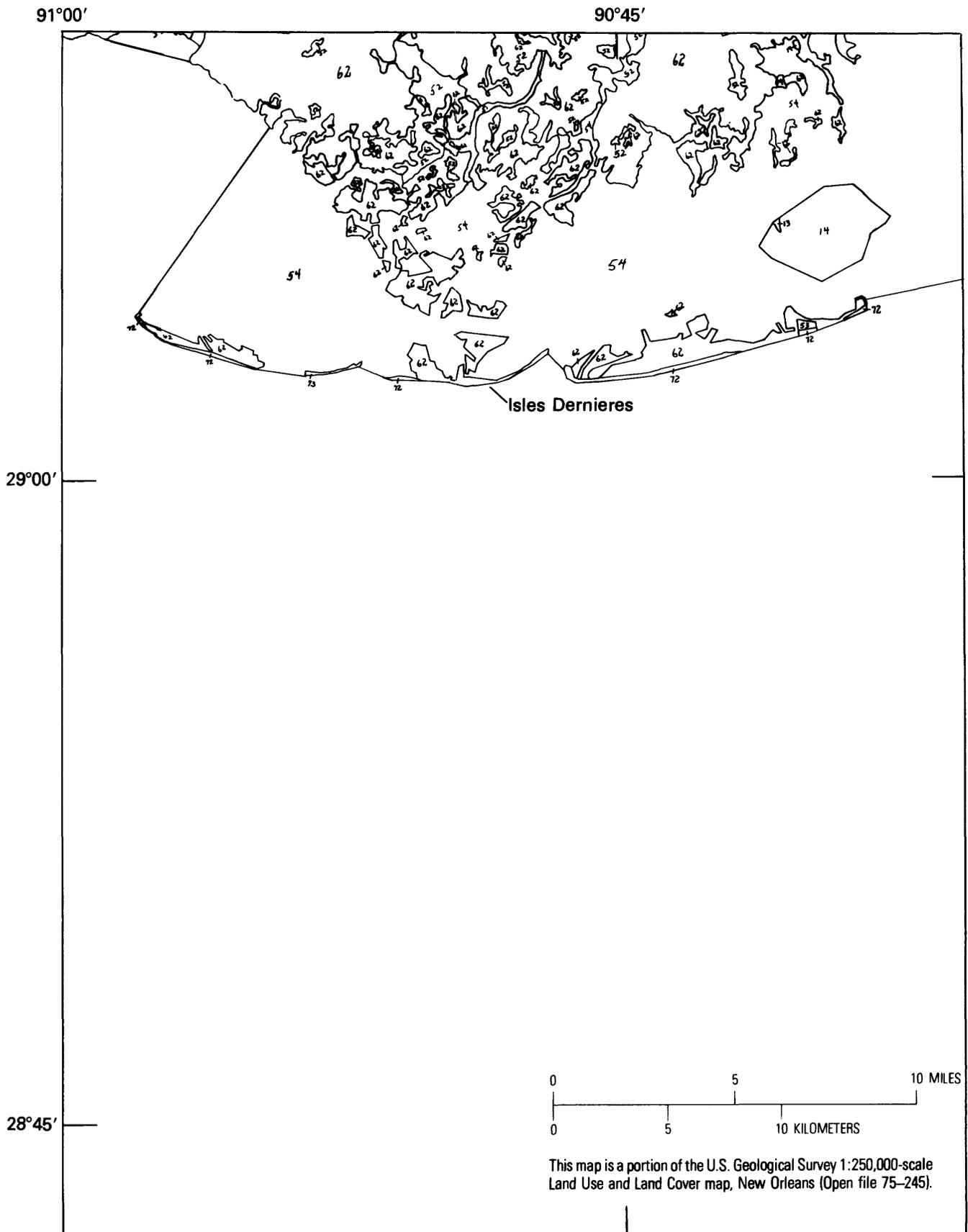


FIGURE 112. – Land use and land cover map of the coastal area near Isles Dernieres, La., with associated barrier islands.

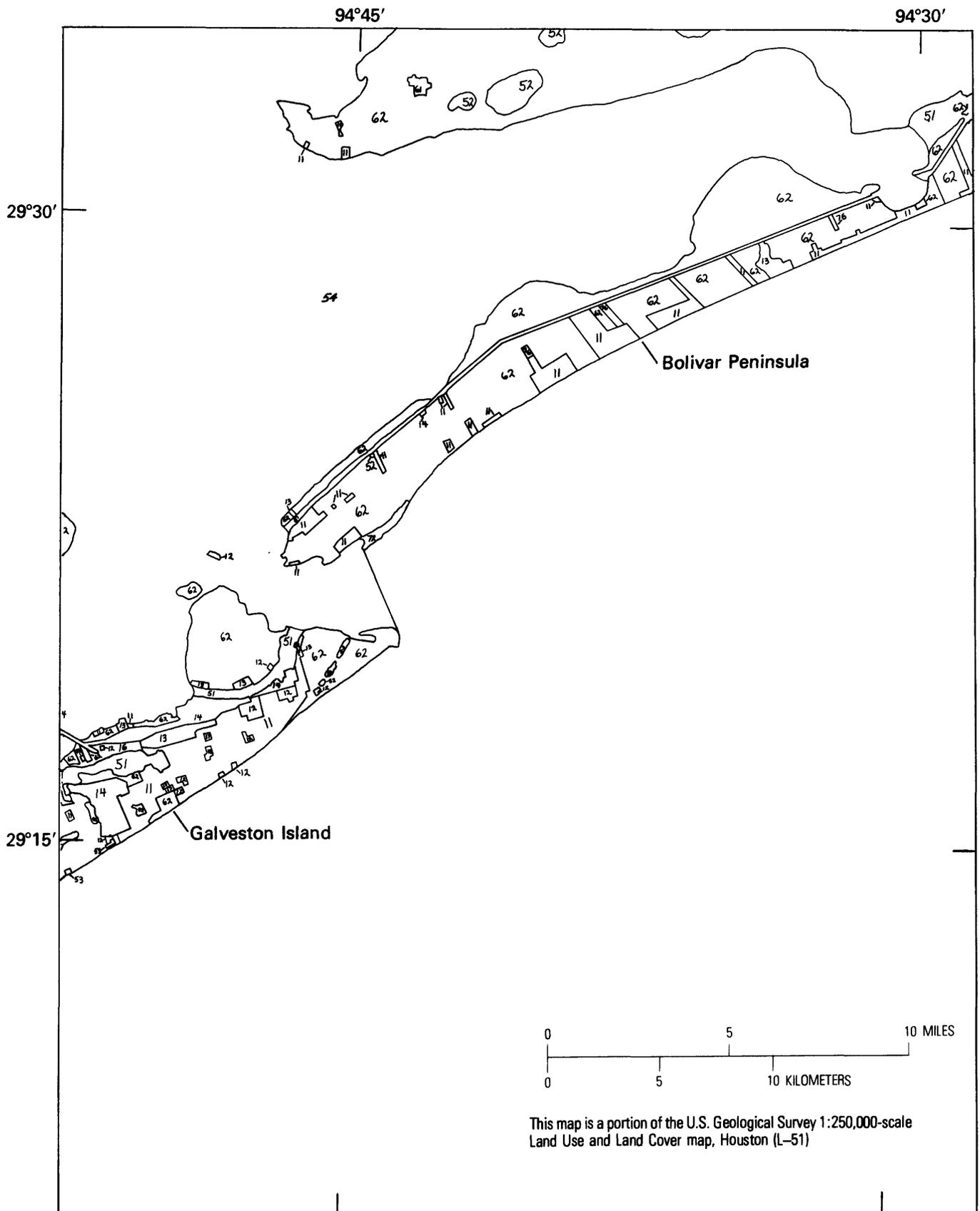


FIGURE 113. -Land use and land cover map of the coastal area near Galveston Island, Tex., with associated barrier islands.

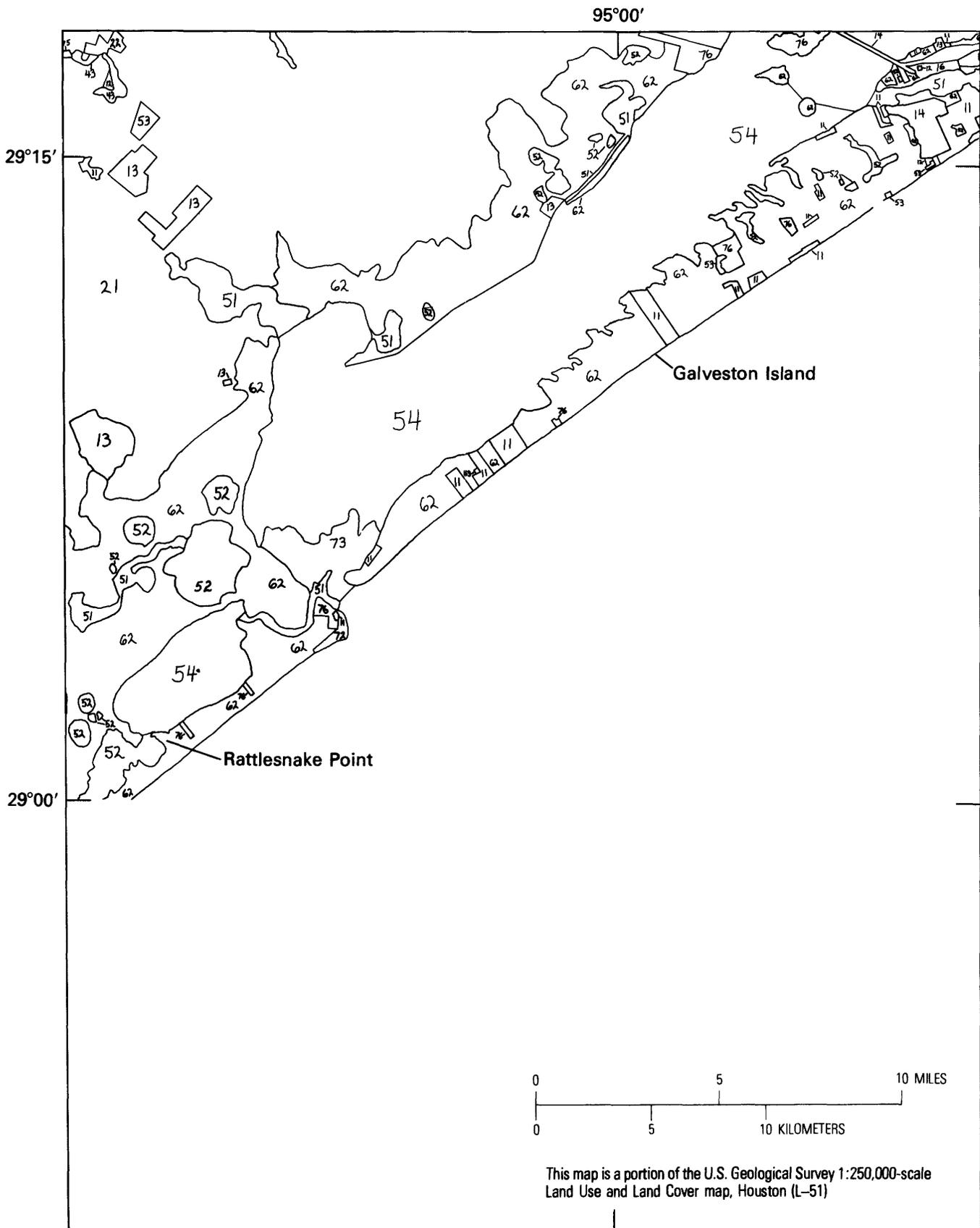


FIGURE 114.—Land use and land cover map of the coastal area near Jamaica Beach, Tex., with associated barrier islands.

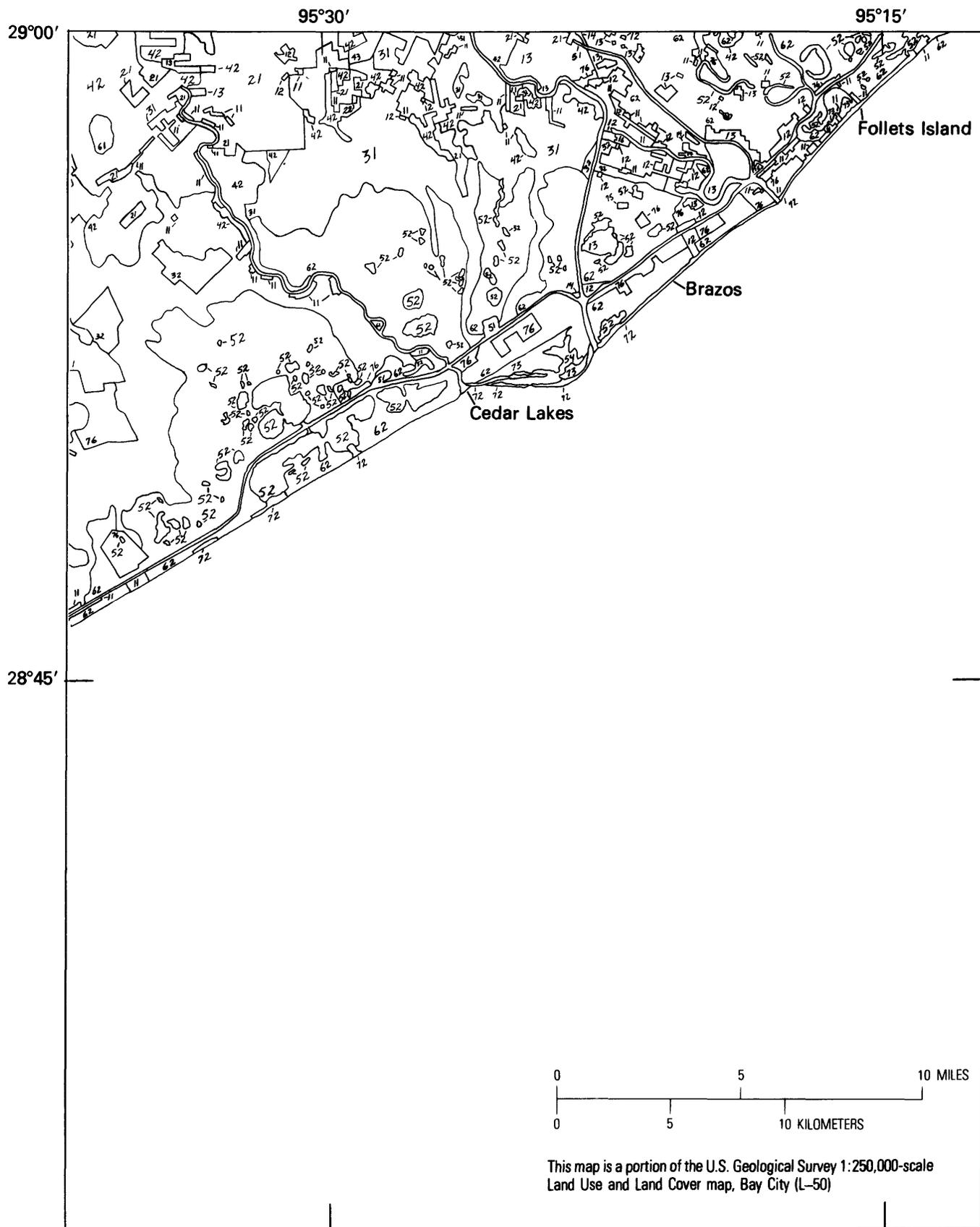


FIGURE 115. – Land use and land cover map of the coastal area near Freeport, Tex., with associated barrier islands.

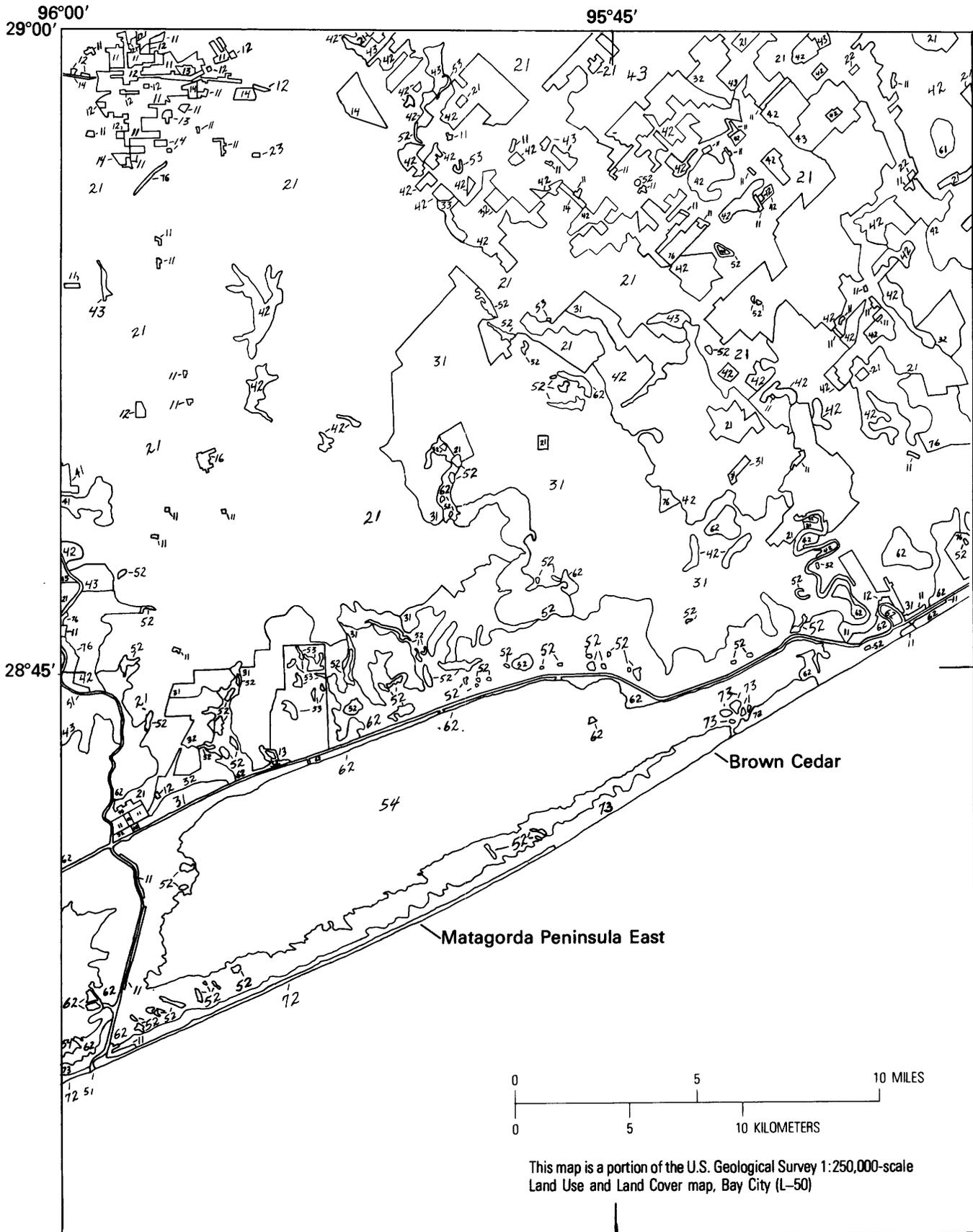


FIGURE 116. – Land use and land cover map of the coastal area near Matagorda, Tex., with associated barrier islands.



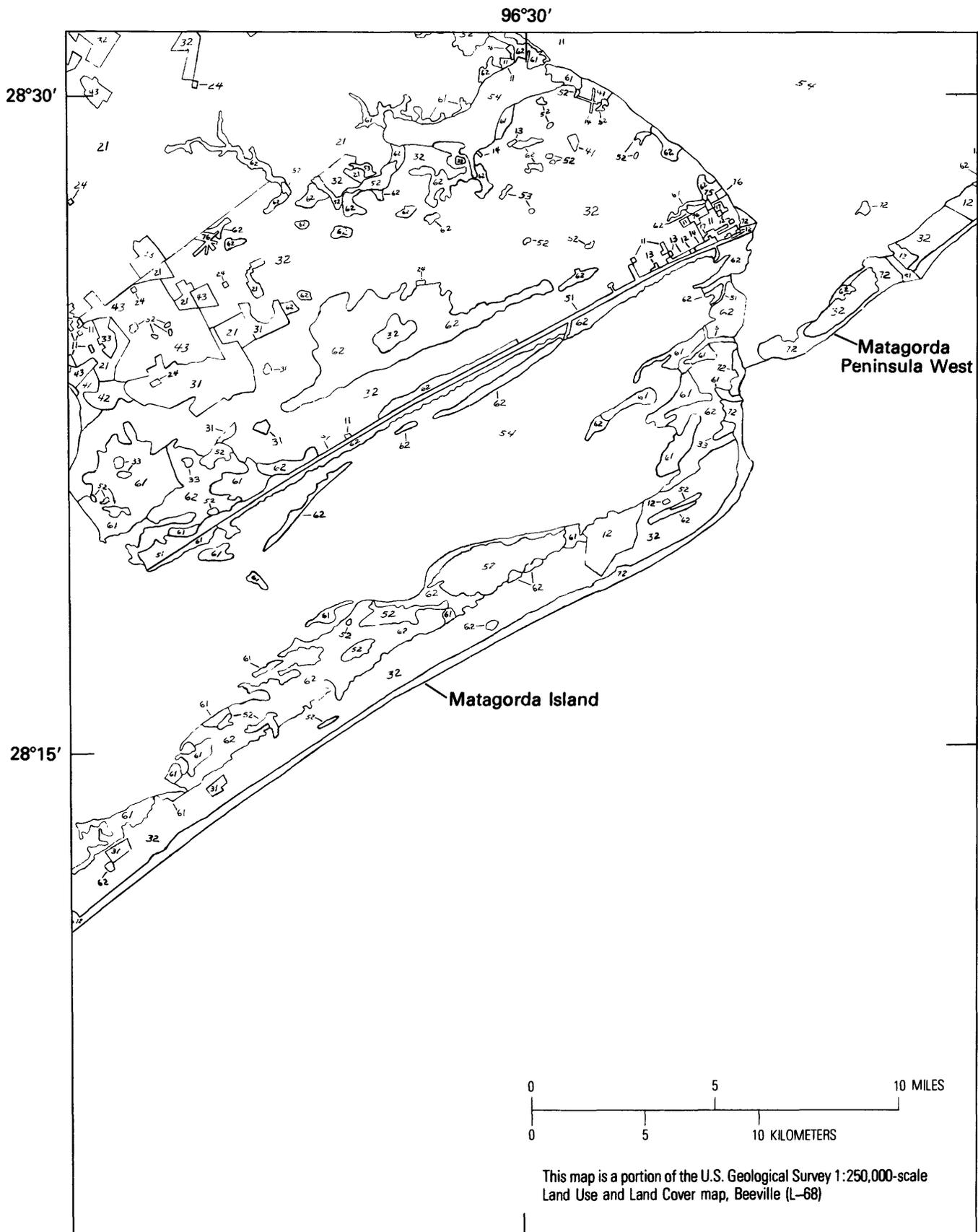


FIGURE 118. – Land use and land cover map of the coastal area near Port O'Connor, Tex., with associated barrier islands.

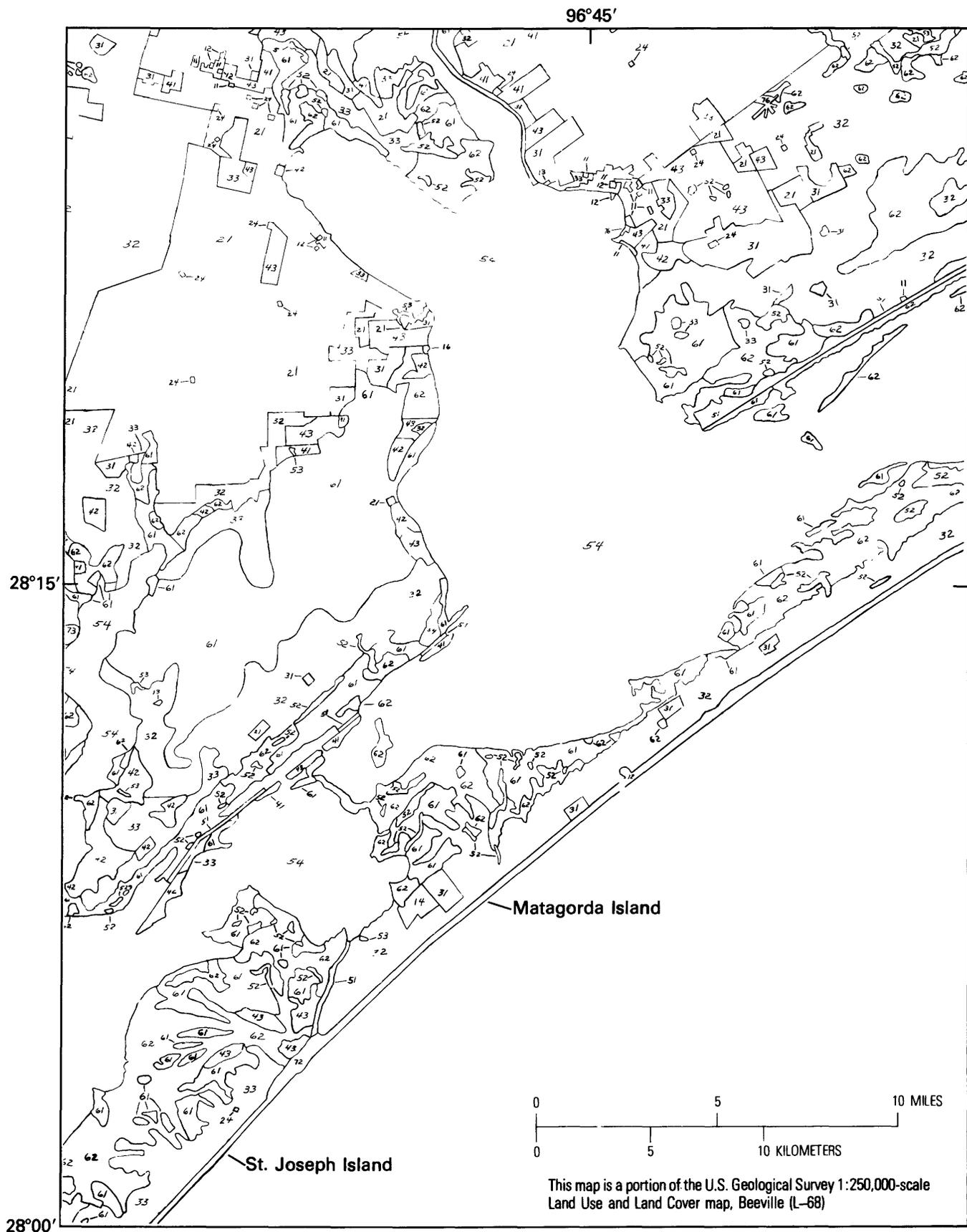


FIGURE 119.—Land use and land cover map of the coastal area near Austwell, Tex., with associated barrier islands.

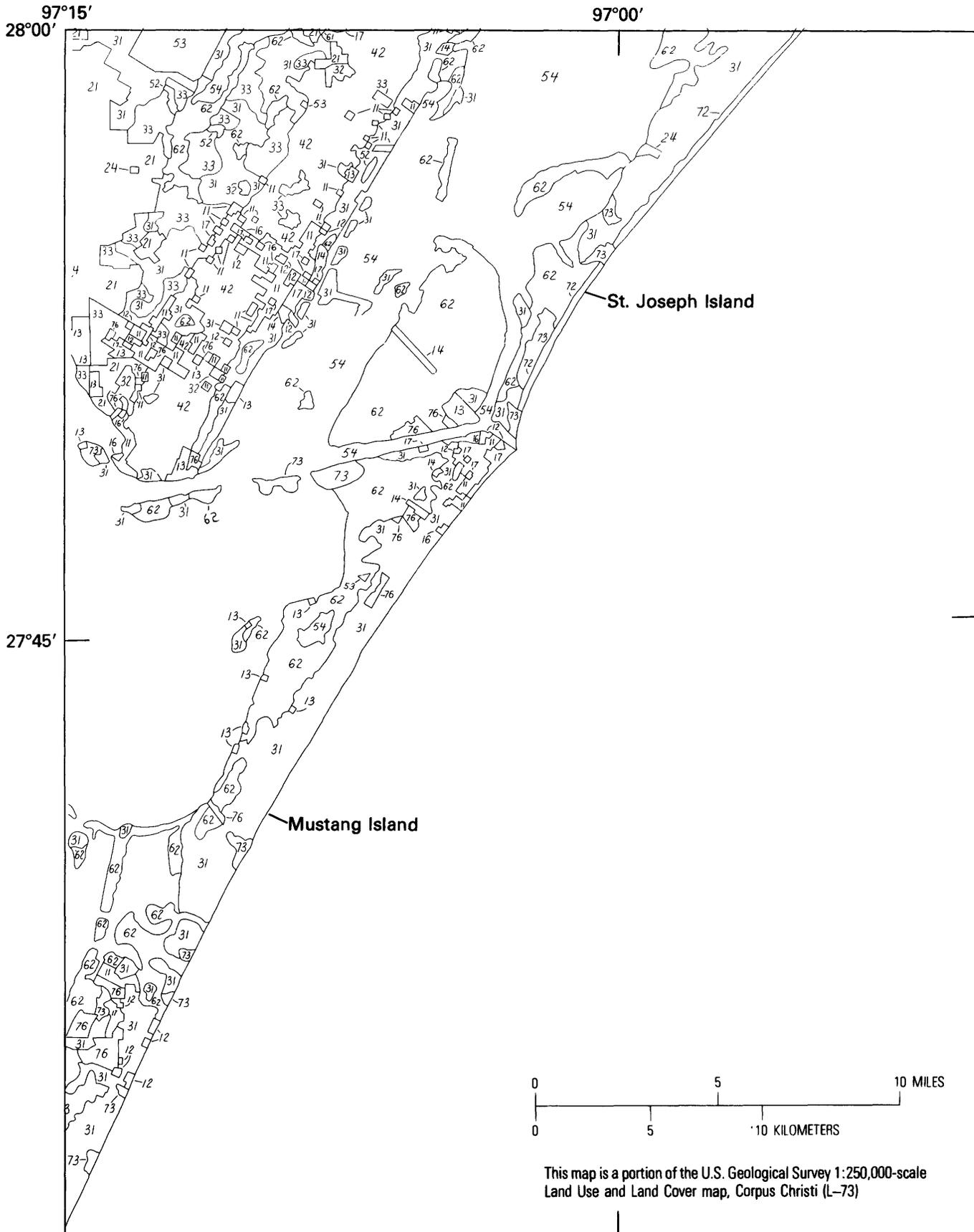


FIGURE 120. - Land use and land cover map of the coastal area near Corpus Christi, Tex., with associated barrier islands.

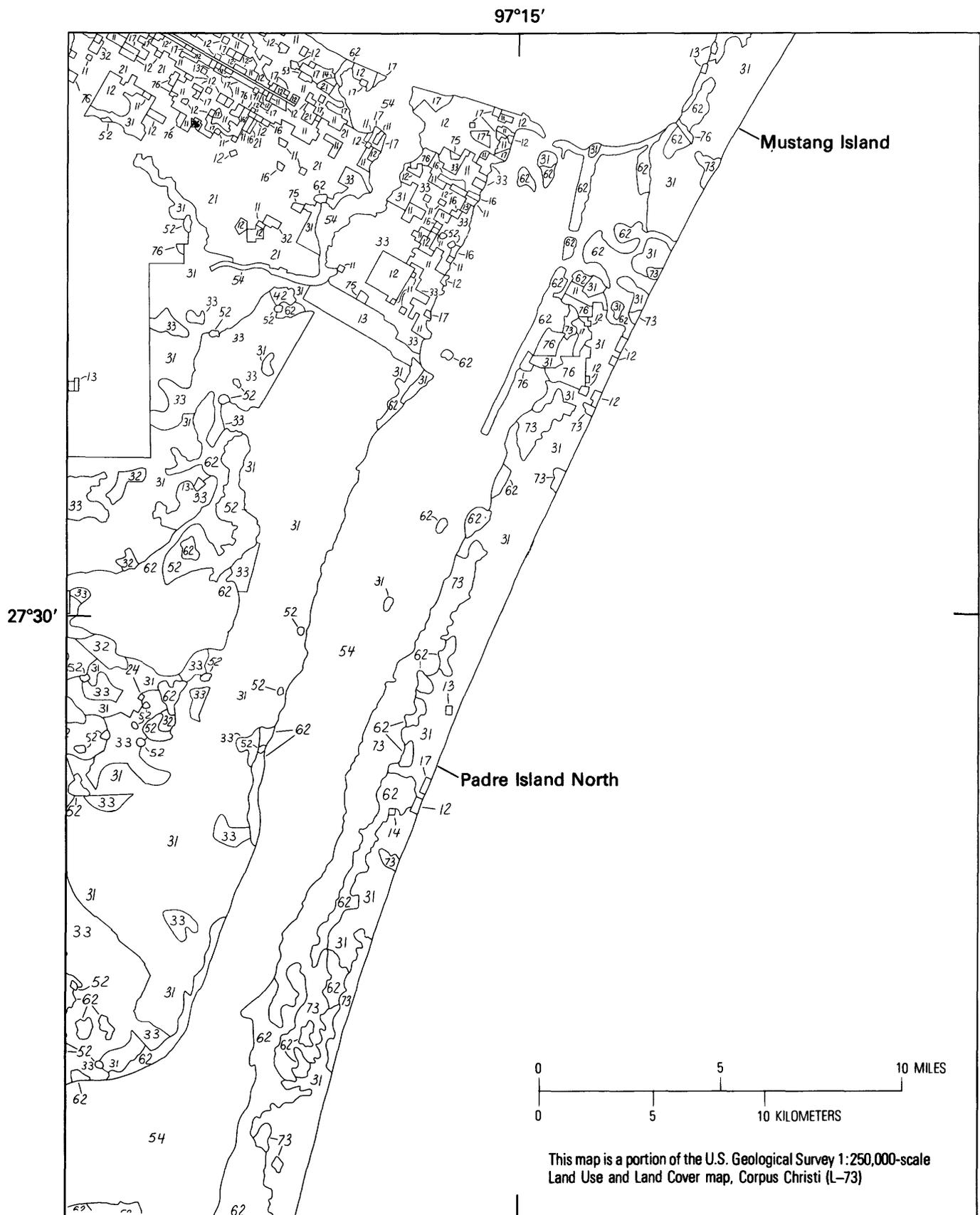


FIGURE 121. – Land use and land cover map of the coastal area near Laguna Vista, Tex., with associated barrier islands.

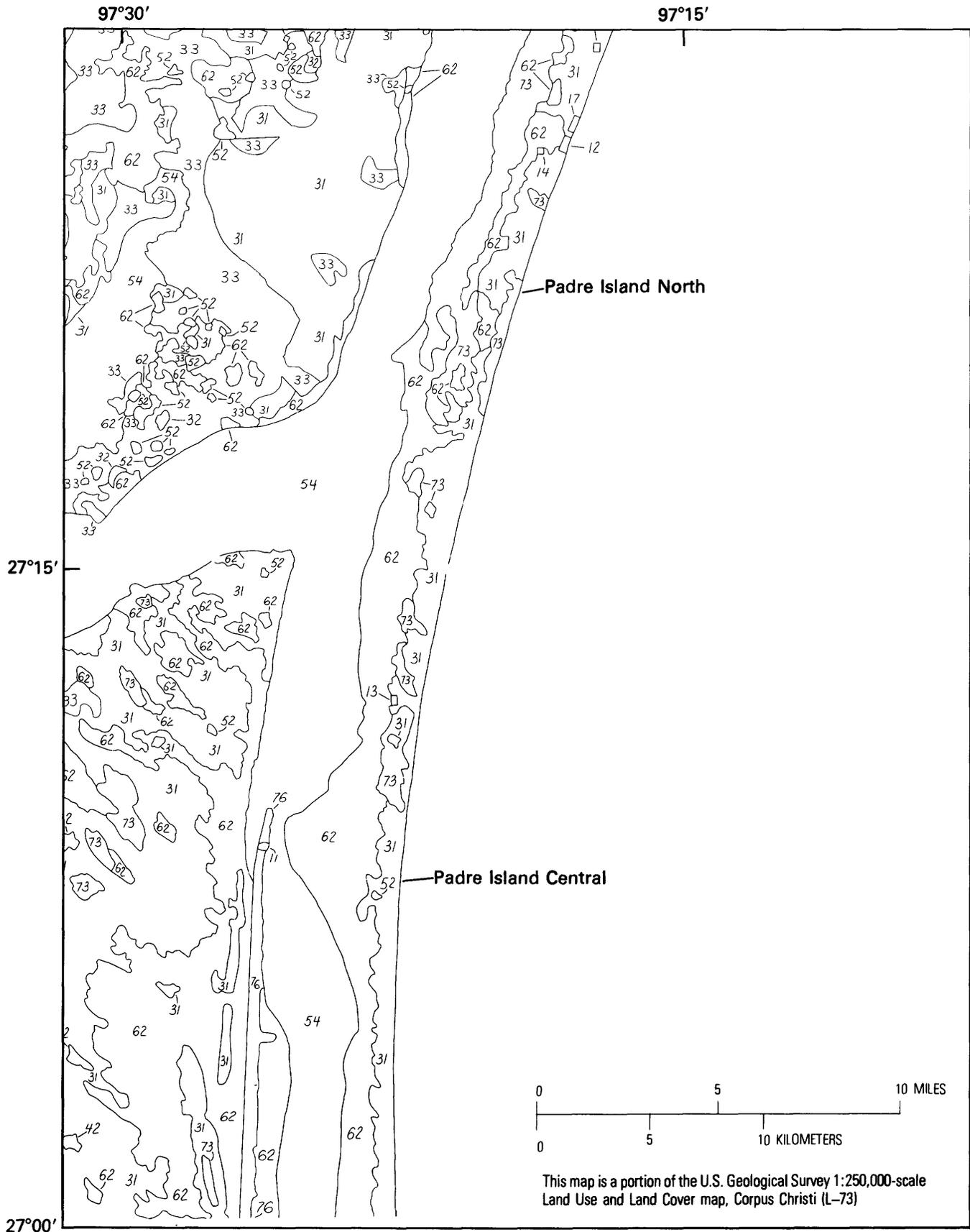


FIGURE 122. - Land use and land cover map of the coastal area near Griffins Point, Tex., with associated barrier islands.

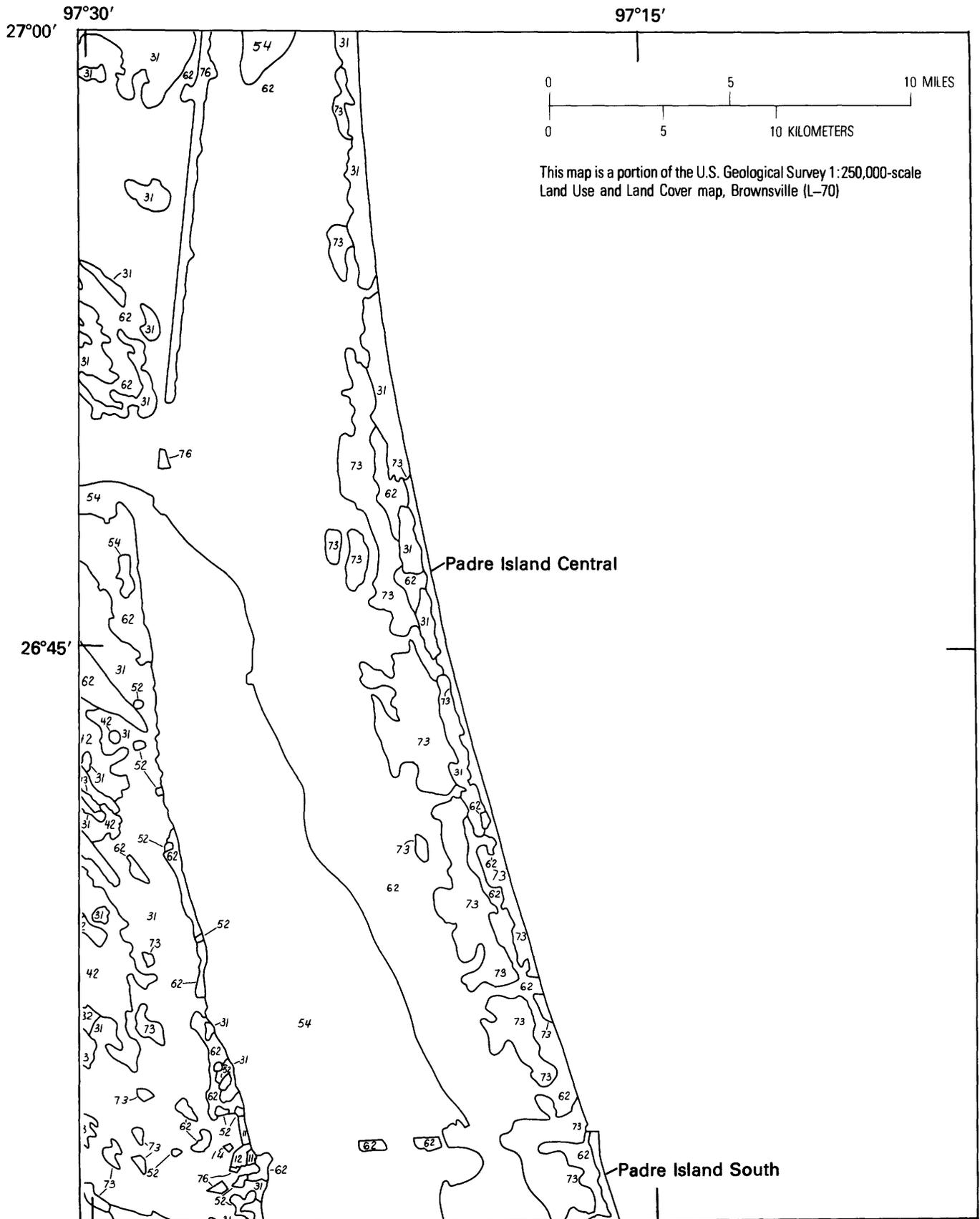


FIGURE 123. - Land use and land cover map of the coastal area near Lopena, Tex., with associated barrier islands.

97°15'

97°00'

26°30'

26°15'

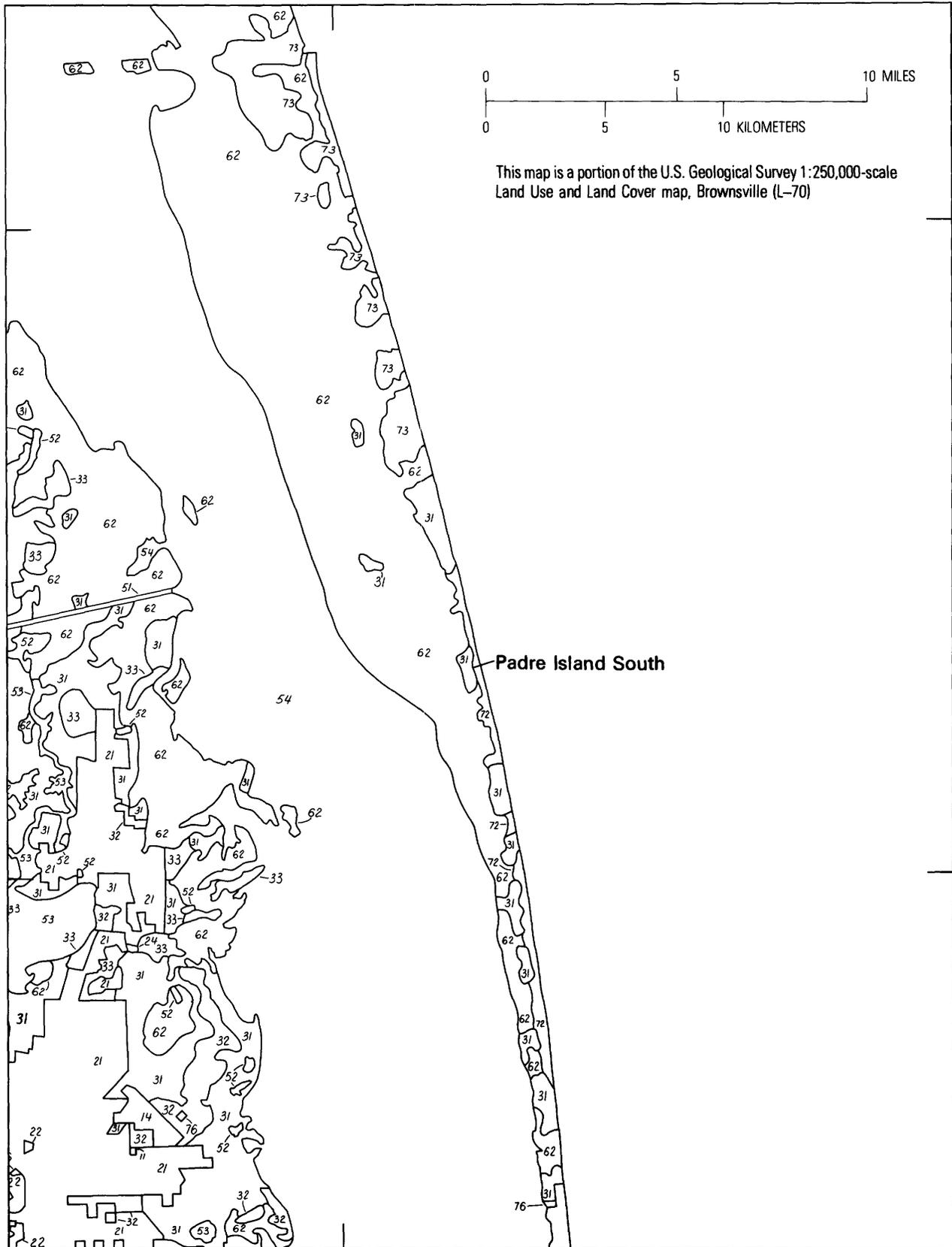


FIGURE 124. - Land use and land cover map of the coastal area near Padre Island South, Tex., with associated barrier islands.

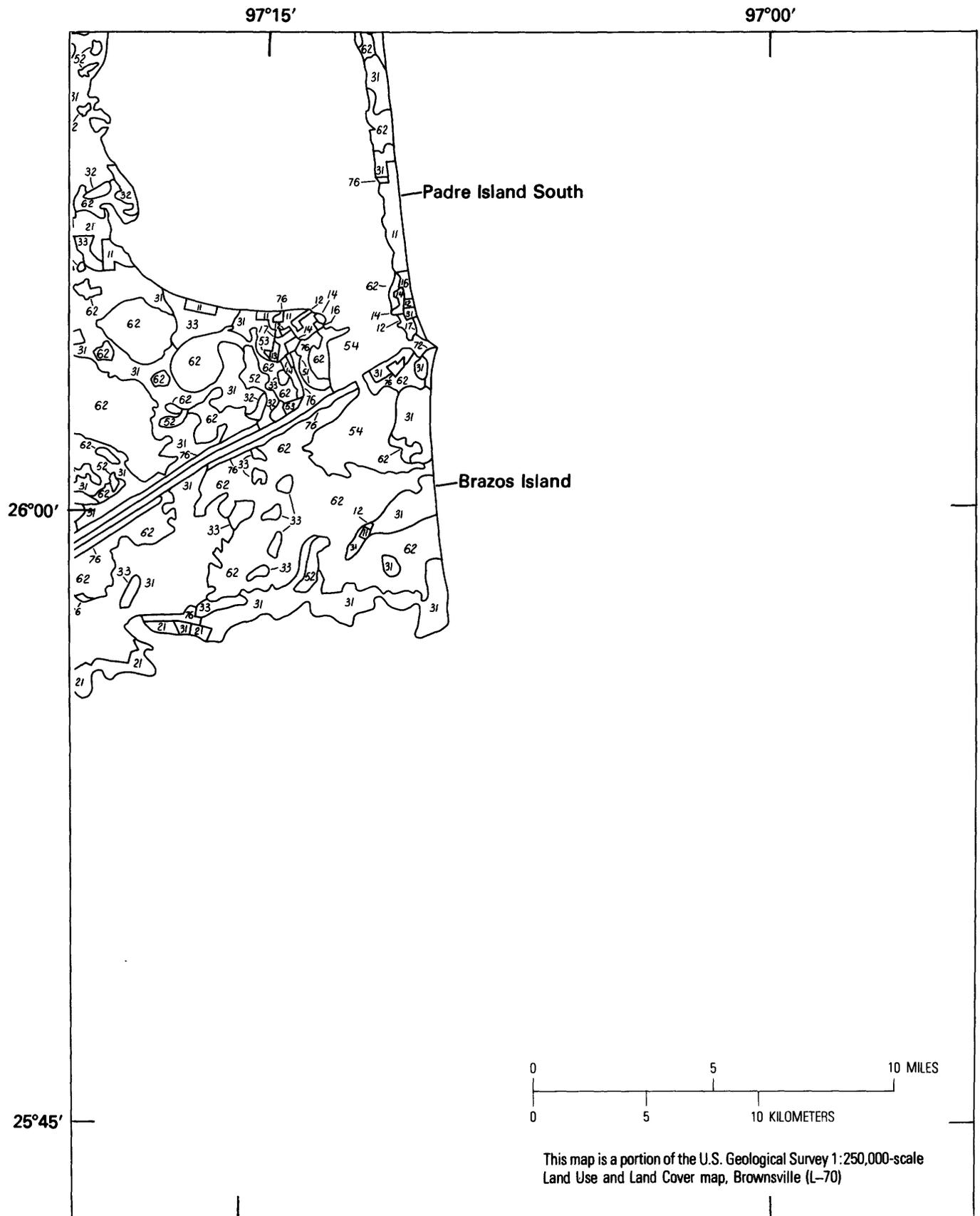


FIGURE 125. — Land use and land cover map of the coastal area near Port Isabel, Tex., with associated barrier islands.