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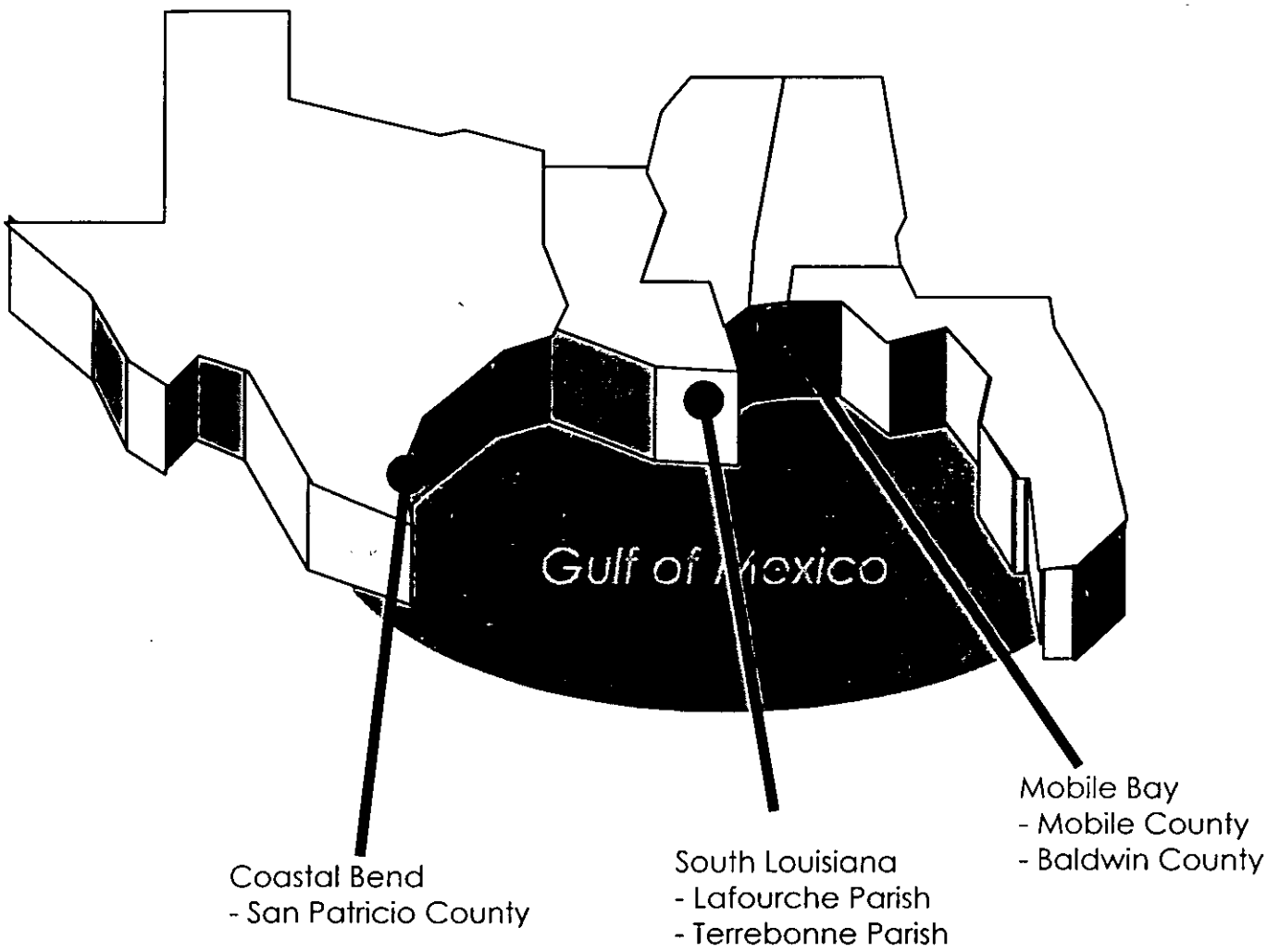
OCS Study
MMS 2001-027

Assessment of Historical, Social, and Economic Impacts of OCS Development on Gulf Coast Communities

Volume II: Narrative Report



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Minerals Management Service
Gulf of Mexico OCS Region

OCS Study
MMS 2001-027

Assessment of Historical, Social, and Economic Impacts of OCS Development on Gulf Coast Communities

Volume II: Narrative Report

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ABSTRACT

The study examines historical, social, and economic changes in three coastal areas -- South Louisiana (Lafourche and Terrebonne parishes), Coastal Bend, Tex. (San Patricio County), and Mobile Bay (Baldwin and Mobile counties) -- since 1930 and the roles of the offshore oil industry in those change. The study areas included five counties or parishes and six communities within the counties or parishes. Three issue areas and their relationship to offshore oil and gas were analyzed -- changes in economic and social structure; community landscapes; and work and education. Changes in economic and social structure were examined at the county and parish level using time series data. Community landscapes and work and education were examined at the community level using rapid ethnographic techniques. Field work for the study was completed in June 1998.

The study found that while there are similarities across political boundaries in the GOM region, there is no one story. Differences occur between and among counties. The impacts of OCS oil and gas activities have varied among the study areas. Direct impacts have been felt most keenly in the South Louisiana study area, particularly south Lafourche Parish, an area with strong ties to marine resources -- both fish and oil. Direct impacts are evident to a lesser extent in San Patricio County. Baldwin and Mobile counties are relative newcomers to coastal counties adjacent to oil and gas activities. Impacts in these two counties are less evident than in the other study areas. Oil and gas impacts were found to differ within the study areas as well as among them. The study areas were exposed to changes from a variety of sources during the study's period of interest. OCS-related activities and regulations were only one and were not the driver for all that occurred. Federal policies (e.g., GI Bill and access to education; altered perceptions of returning World War II veterans towards racial and ethnic tolerance; civil rights movement and school desegregation; and connecting the country through development of the Interstate highway system) have driven much of the change in the study areas. The similarities across the study areas often relate to the national, although non-MMS related, policies. With few exceptions, OCS oil and gas activity has not altered historic patterns in education and work in the GOM. The decline in oil and gas activities in the mid-1980's brought change to the economies and to individuals most directly affected by the offshore oil and gas industry -- Lafourche and Terrebonne parishes and to a lesser extent, San Patricio County.

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LIST OF ACRONYMS AND ABBREVIATIONS

AAA	Agricultural Adjustment Act
ABC	Academic, Business and Community Program
ADA	Average Daily Attendance
ADDSCO	Alabama Dry Dock and Ship Building Company
ADECA	Alabama Department of Economic and Community Affairs
ADEM	Alabama Department of Environmental Management
AFL	National Agricultural Workers Union
AIDT	Alabama Industrial Development Training
BAWI	Balance Agriculture with Industry
BOC	Bureau of the Census
BRAC	Base Realignment and Closure Commission
CCCL	Coastal Construction Control Line
CDP	Census Designated Place
CIO	United Packinghouse Workers
COBRA	Coastal Barrier Resources Act of 1982
CoC	Chamber of Commerce
CMI	Coastal Marine Institute
CNA	Center for Naval Analysis
CPL	Central Power & Light
CUSUM	Cumulative Sums
CV	Coefficient of Variance
DOC	Department of Commerce
DOI	Department of the Interior
DSP	Difference Stationary Process
ECO	Edison Choest Offshore
EEZ	Exclusive Economic Zone
EPA	U.S. Environmental Protection Agency
ESP	Environmental Studies Program
FIRE	Fire, Insurance and Real Estate
FSA	Farm Security Administration
GAO	U.S. General Accounting Office
GOM	Gulf of Mexico
HB&A	Harland, Bartholomew & Associates
ICW	Intercoastal Waterway
IDB	Industrial Development Board
ISO	International Standards Organization

LIST OF ACRONYMS AND ABBREVIATIONS (cont'd)

JORTC	Junior Reserved Officer Training Corps
LLE	Louisiana Land and Exploration Company
LOOP	Louisiana Offshore Oil Port
LSU	Louisiana State University
LULAC	League of United Latin American Citizens
MDC	MDC Inc.
MMS	Minerals Management Service
MRGO	Mississippi River Gulf Outlet
NAACP	National Association for the Advancement of Colored People
NASA	National Aeronautics and Space Administration
NAVSTA	Naval Station-Ingleside
NEP	National Estuary Program
NFIA	National Flood Insurance Act
NMFS	National Marine Fisheries Service
OBRA	Omibus Budget Reconciliation Act of 1991
OCS	Outer Continental Shelf
OCSLA	Outer Continental Shelf Lands Act
OPEC	Organization of Petroleum Exporting Countries
PBI	Peterson Builders, Inc.
POW	Prisoner of War
PWA	Public Works Administration
SCHE	Study Commission on Higher Education
SRB	Scientific Review Board
SSFPF	Semisubmersible Floating Production Facility
STCW	Standards for Training, Certification and Watchkeeping
TEDs	Turtle excluder devices
TIE	Transnational Information Exchange
TLP	Tension Leg Platforms
TOPS	Louisiana Tuition Opportunity Program for Students
TSP	Trend Stationary Process
VAR	Vector Autoregression
WFRPC	West Florida Regional Planning Council
WPA	Works Progress Administration

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1.0 Introduction

1.1 Study Objective and Background

By dint of fate or good fortune, the Gulf of Mexico (GOM) has a large share of the country's known offshore oil and gas resources and had a head start in developing those resources. The offshore oil industry developed locally much of the technology needed to push further into the Gulf of Mexico and other parts of the world in search of energy resources. This included the many support industries that service offshore oil exploration, development, and production. The region developed support systems in terms of community infrastructure. Many local residents developed or adapted job skills to the industry's needs.

Much has been written about the offshore oil and gas industry in the GOM, but the economic and social effects are not fully understood. The objective of this study then is to enhance the understanding and document the relationship between Outer Continental Shelf (OCS) development and the economies, communities and households of the GOM region. The study examines regional change in the GOM since 1930 and the offshore oil industry's role in those changes. To do this, the study:

- Identifies social and economic trends and compares and contrast these trends with the region and the nation
- Analyzes factors behind the trends
- Contextualizes the findings in terms of the history of the South and appropriate comparative literature

This is the second part of a two-phased project to provide a baseline of the social and economic consequences of OCS development on Gulf Coast communities. Phase I of the study entitled, *Socioeconomic Baseline Study of the Gulf of Mexico Region*, was prepared by the Coastal Marine Institute (CMI) at Louisiana State University. It is a database of various census and related data sets of more than 3,000 variables from 1930 to 1990 for the more than 500 counties in Alabama, Florida, Louisiana, Mississippi, and Texas. The current project, or Phase II of the baseline study, examines historical, social, and economic impacts of OCS development on GOM selected coastal communities. A secondary objective of the project was to enhance the understanding of the study of offshore oil and gas impacts through the use of the analytical approaches used in history, anthropology, and economics and integration of the results of these analyses.

1.2 Analytical Framework

A summary of the literature on resource-dependent communities categorized the previous studies as focusing on one of the following: analysis at a consistent level of aggregation; longitudinal studies; determining the relationship of local production and social change; and comparative and descriptive analyses (Machlis et al., 1990). This study, by design, has elements of all of the above.

The study is multi-disciplinary drawing from economics, cultural anthropology, and history, and as such uses both quantitative and qualitative methods. It sidesteps the difficulty in defining community (Wilkenson, 1986) by focusing on two geopolitical units -- the county, or parish in the case of Louisiana, and one or more subcounty areas (referred to as communities in the report) of the county or parish. It is a longitudinal study covering the time period 1930 to 1998, although, as will be seen throughout the report, the coverage is sometimes uneven because of data unavailability. It analyzes the relationships of offshore oil and gas to three issue areas -- changes in community economic and social structure; community landscapes; and work and education -- within three study areas. Finally, the study uses descriptive and comparative techniques to place the trends and impacts in the broader context of the regional setting, of the South. By design, the study was as much testing an analytical approach as it was assessing impacts from offshore oil and gas development on GOM coastal communities. A description of the study's methodology is included in Appendix A.

The multi-disciplinary nature of the study is seen in a number of ways, including the use of quantitative and qualitative methods and the treatment of the issue areas. The assessment of changes in community economic and social structure, which includes a causality analysis, focuses solely on the county and is based on a quantitative analysis of secondary sources of data. The economic and social variables used draw heavily from environmental and social impact assessment literature and the literature of rural sociology and environmental sociology. Reflecting the economics discipline on which it was based, the analysis of changes in economic and social structure is written impersonally from the third person point of view. In contrast, the analyses of community landscapes and occupation and educations were based on local documents and discussions with a non-random sample of individuals using ethnographic techniques. The first person point of view used in anthropology can be seen in the discussion of community landscapes. Woven into all the issue discussions is a historical overview, which takes the impersonal, arm's length view. The differences in the presentation styles of the three issue areas highlights the multi-disciplinary nature of the study. The approach also provides three different ways of looking at the region: (1) a historical overview based broadly on published materials; (2) a county-level analysis of time series data based on published data sets; and (3) community/study area and issue case studies based on local materials and discussions with individuals.

A further note about the use of history in the study is warranted. The history of the South is one of the contexts in which the study is placed. This leads to the question: what is the South? There are many definitions, including that of the U.S. Census Bureau that posits a region that includes Delaware and Maryland. However, most historians define the South that slavery, secession, and segregation made: the 11 former Confederate States (Virginia, North Carolina, South Carolina, Georgia, Florida, Tennessee, Alabama, Mississippi, Louisiana, Texas, and Arkansas). Many also include Kentucky. The South in this report refers to those 12 States. As will be seen in the report, the lower or Deep South (Alabama, Mississippi,

Louisiana, South Carolina, and Georgia) is sometimes differentiated from upper South States. Texas and Florida are mostly included among in the upper South States, despite their geographic distance from these States. The history of the South that is woven throughout the report is a blend of the region as a whole and the lower portion. To set the stage for the 1930 to 1998 time frame of the study, a longer view of history was taken. The history portion of the study begins in 1870. As will be seen, the time periods of Southern history are not the same as those for the offshore oil and gas industry in the Gulf of Mexico.

It should be noted that the field work for the study was conducted between October 1997 and June 1998. Thus, the field work was completed prior to the downturn in oil prices experienced later in 1998 and the more recent upturn.

1.3 The Study Areas

The study focused on three areas that were selected in a three-part process. First, a cluster analysis was used to identify groups of similar counties/parishes based on variables from the *Socioeconomic Baseline Study of the Gulf of Mexico Region* prepared for the Minerals Management Service (MMS) by Louisiana State University. The cluster analysis was run using the year with the most complete data set in the baseline database, 1990. Data contained in the data set were organized in terms of demography, age, education, civil employment, establishments, income, and government finance and employment. The broad categories provided a basis for determining the groupings of counties/parishes. Eventually, the cluster analysis identified eight groupings of counties/parishes. Then, expert opinion from MMS, the research team, and the study's Scientific Review Board (SRB) was used to select five study counties/parishes from four of the clusters.[1] The five counties/parishes were the focus of the regional trends analysis. The ethnographic work was conducted in six communities within these counties/parishes. The communities were selected following scoping trips and using expert opinion from MMS, the research team, and the SRB. The study area counties/parishes and communities are shown below in Table 1-1 by study area name and the study areas are shown visually in Figure 1-1.

It should be noted that none of the study area counties is classified as rural on the rural-urban continuum developed by the U.S. Department of Agriculture, Economic Research Service (1989). All study area counties are metro counties. Baldwin, Mobile, and San Patricio counties are classified as counties in metro areas of 250,000 to 1 million population. Lafourche and Terrebonne parishes are classified as counties in metro areas of fewer than 250,000 population. More than half of the 74 Gulf Coastal counties are classified as metro counties. Of the 24 non-metro counties, only 2 [Dixie (Florida) and Kenedy (Texas)] are

[1] Lafourche and Terrebonne parishes are in the same cluster.

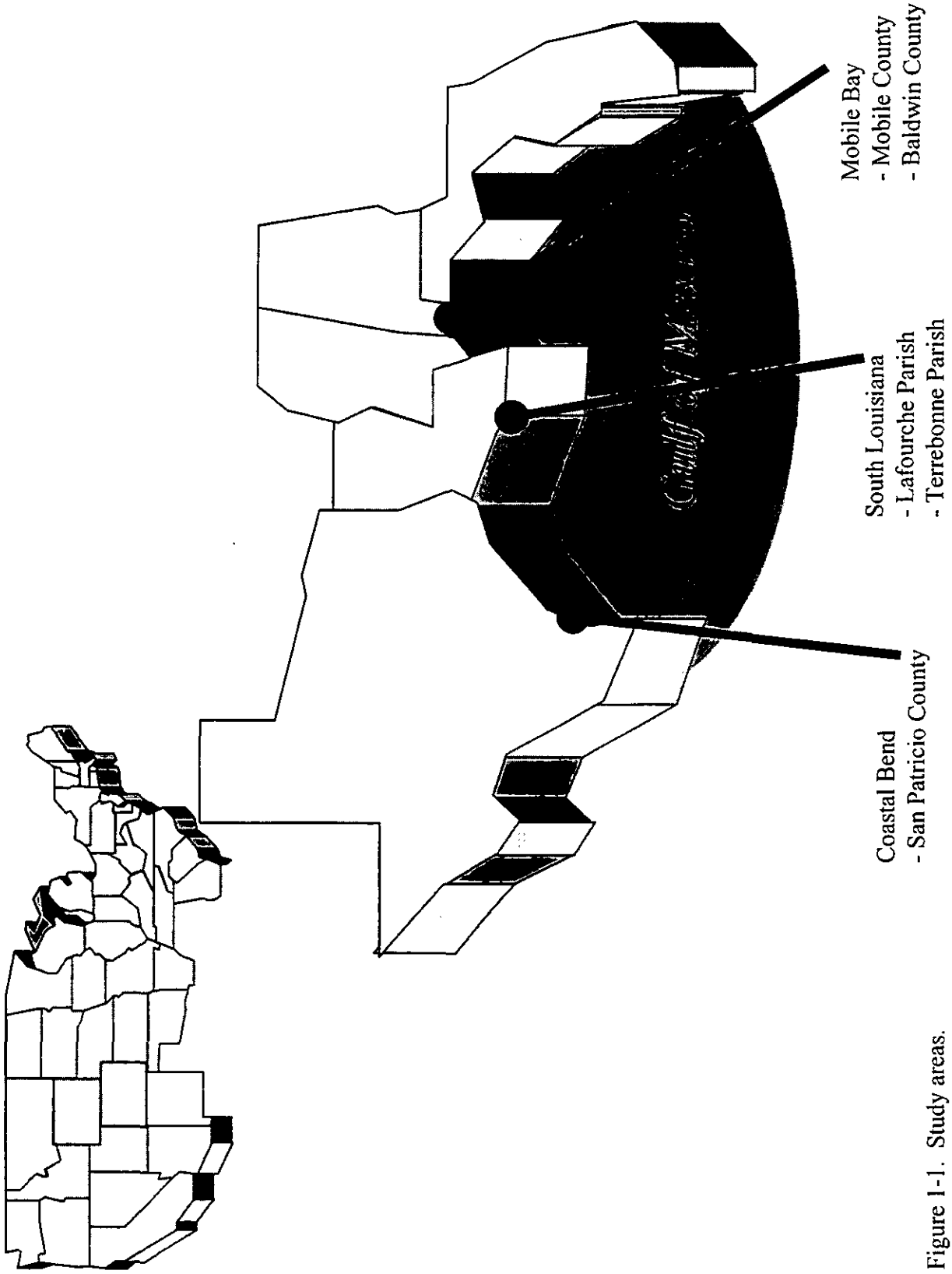


Figure 1-1. Study areas.

classified as completely rural. As will be seen, subareas of an otherwise metro county, including communities within the study area counties, can be quite rural in character.

Table 1-1. Study area counties and communities.

South Louisiana Study Area	Coastal Bend Texas Study Area	Mobile Bay Alabama Study Area
- Lafourche Parish, La. -- Galliano - Terrebonne Parish, La. -- Schriever	- San Patricio County, Tex. -- Ingleside -- Mathis	- Baldwin County, Ala. -- Gulf Shores - Mobile County, Ala. -- Theodore

1.3.1 South Louisiana Study Area

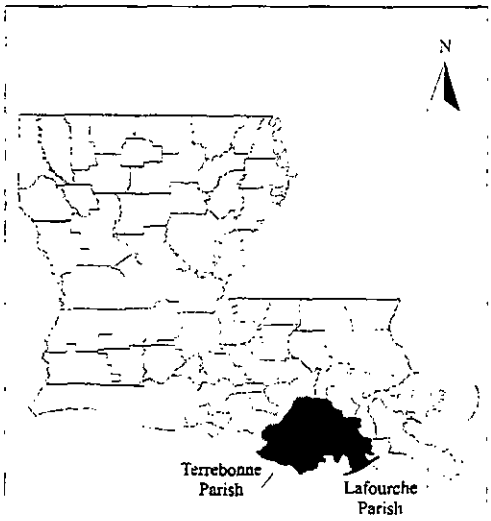


Figure 1-2. South Louisiana study area.

The South Louisiana study area, Lafourche and Terrebonne parishes, is located in the south central part of the State (see Figure 1-2). Terrebonne Parish (meaning good land) borders the Gulf of Mexico and is the second largest parish in the State in terms of land area. Houma, the largest town and parish seat, is about 60 miles from New Orleans. Houma is located on the Intracoastal Canal and connected to the Gulf of Mexico by the Houma Navigational Canal. Lafourche Parish borders Terrebonne Parish to Terrebonne's north and east. It is named for the bayou that cuts through it. Until 1822, Lafourche and Terrebonne were one unit (Lafourche Parish). Thibodaux is Lafourche Parish's largest town and the parish seat. The study area communities were Galliano in Lafourche Parish and Schriever in Terrebonne Parish. (See Figure 1-3 for a map of the two parishes.)

The area's natural features, which vary from marshland, waterways, and bayous in the coastal areas and to flat agricultural lands in the north, have helped to shape settlement patterns and development. The area, along with Southwest Louisiana, has historically been the primary staging and support area for offshore oil and gas exploration and development. The Port of Fouchon, a shallow draft port at the mouth of Bayou Lafourche on the Gulf of Mexico, is a major onshore staging area for OCS oil and gas activities in the Central and Western Gulf of Mexico and the land fall for the Louisiana Offshore Oil Port. The port has experienced a rapid growth of OCS activities since the interest in deepwater prospects.

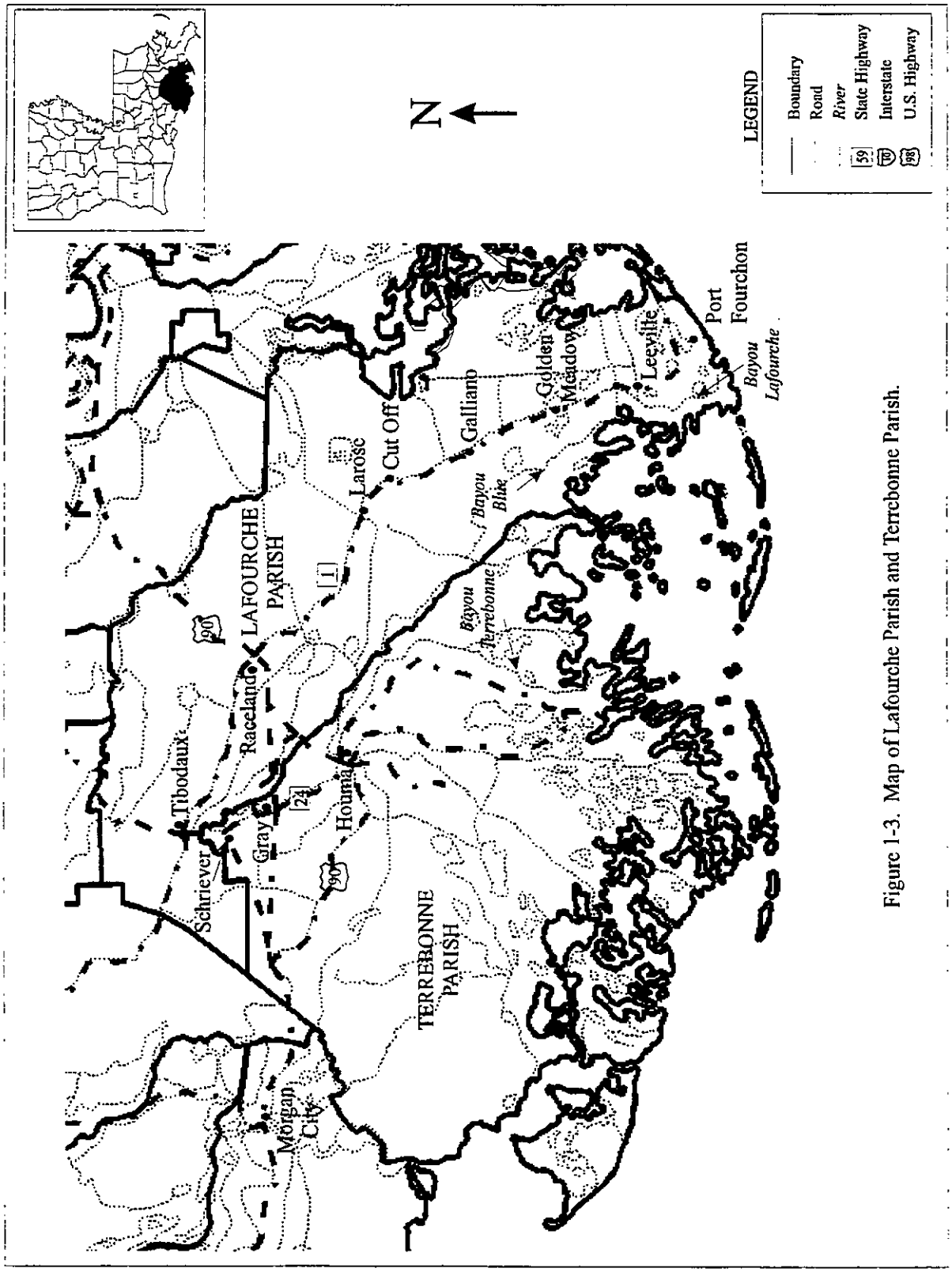


Figure 1-3. Map of Lafourche Parish and Terrebonne Parish.

The settlers in the area also help set it apart from other parts of Louisiana and the region. Settlers like the Houma Indians, for whom the town of Houma was named, were drawn to the area by its remoteness. French, Spanish, English, and Germans farmers settled in the area in the early 1700's. French Acadians, forcibly exiled by the British from present day Nova Scotia settled in the area in the mid-1700, again drawn to the area in part because of its remoteness. Descendants of this group of people are called Cajuns. Anglo-American planters arrived in the 1800's bringing African slaves to work the plantations. Traditionally, the area has had strong ties to agriculture, fishing, and trapping. These ties are still evident in the area, but regionally are no longer the mainstay of the economy.

Table 1-2 serves as an introduction to some general characteristics of the South Louisiana Study Area parishes and communities in 1990.

1.3.2 Coastal Bend Texas Study Area

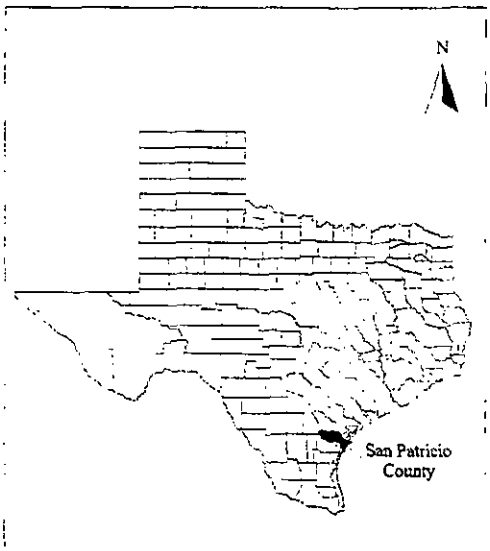


Figure 1-4. Coastal Bend, Texas study area.

The Coastal Bend Texas study area is San Patricio County, located across Corpus Christi Bay from the city of Corpus Christi in Nueces County (see Figure 1-4). Corpus Christi is the 8th largest city in Texas. The city, once a farming and ranching center, is now a major shipping point and an important center for petroleum and natural gas processing. The construction of a deepwater channel to the Gulf of Mexico in 1926 opened the Port of Corpus Christi to oceangoing vessels and spurred industrial development. In addition to the port, Corpus Christi Bay is a major coastal recreational area. San Patricio County, now one of the smaller counties in Texas, once encompassed the territory that included what is now Nueces County as well as that of two other counties, Live Oak and Bee counties. Portland is the largest city (1997-14,200 est.) in San Patricio County. Sinton, established as a station on a railroad, is the county seat. Mathis, an interior town, and Ingleside, a coastal town, were the study area communities. (See Figure 1-5 for a map of the county.)

The cultural and social character of San Patricio County has been influenced by two groups of settlers. In the early 1800's, about 200 Irish Catholic families were settled in the area under an agreement between two individuals and the government of Mexico. In the early 1900's, land agents advertised San Patricio County property to prospective farmers. Trainloads of laborers were brought from Mexico to ready the land for farming. Many of the laborers stayed to work in the fields. In addition to farming, the oil and gas industry has

Table 1-2. South Louisiana: general characteristics, 1990.

Characteristic	Lafourche Parish	Galliano CDP	Terrebonne Parish	Schriever CDP
Total Population	85,788	4,294	97,048	4,958
Age				
% Under 18	30.1%	28.3%	32.4%	31.1%
% 65 Years and Older	9.3%	10.1%	8.3%	6.8%
Households				
Total	28,835	1,504	31,837	1,642
Persons Per Household	2.93	2.86	3.02	3.02
Race (Percent)				
White	84.3%	94.6%	79.5%	78.8%
Black	12.5%	0.3%	17.1%	19.6%
American Indian, Eskimo, or Aleut	2.2%	4.3%	2.7%	1.0%
Asian or Pacific Islander	0.8%	0.6%	0.7%	0.6%
Other Race	0.2%	0.2%	0.3%	0.1%
Hispanic Origin of Any Race (Percent)	1.5%	1.8%	1.4%	1.1%
Educational Attainment (Persons 25 Years and Older)				
% High School Graduate or Higher	56.2%	47.1%	59.6%	62.0%
% Bachelor's Degree or Higher	10.0%	5.2%	9.4%	9.2%
Housing				
Total Number of Units	31,332	1,624	35,416	1,813
% Owner Occupied	75.7%	85.2%	73.2%	75.5%
Employment (Persons 16 Years and Over)				
Civilian Labor Force	35,020	1,651	38,507	2,108
Employed	32,168	1,521	35,356	1,985
% Employed	91.9%	92.1%	91.8%	94.2%
Unemployed	2,852	130	3,151	123
% Unemployed	8.1%	7.9%	8.2%	5.8%

CDP - Census Designated Place

Source: U.S. DOC, BOC, 1999.

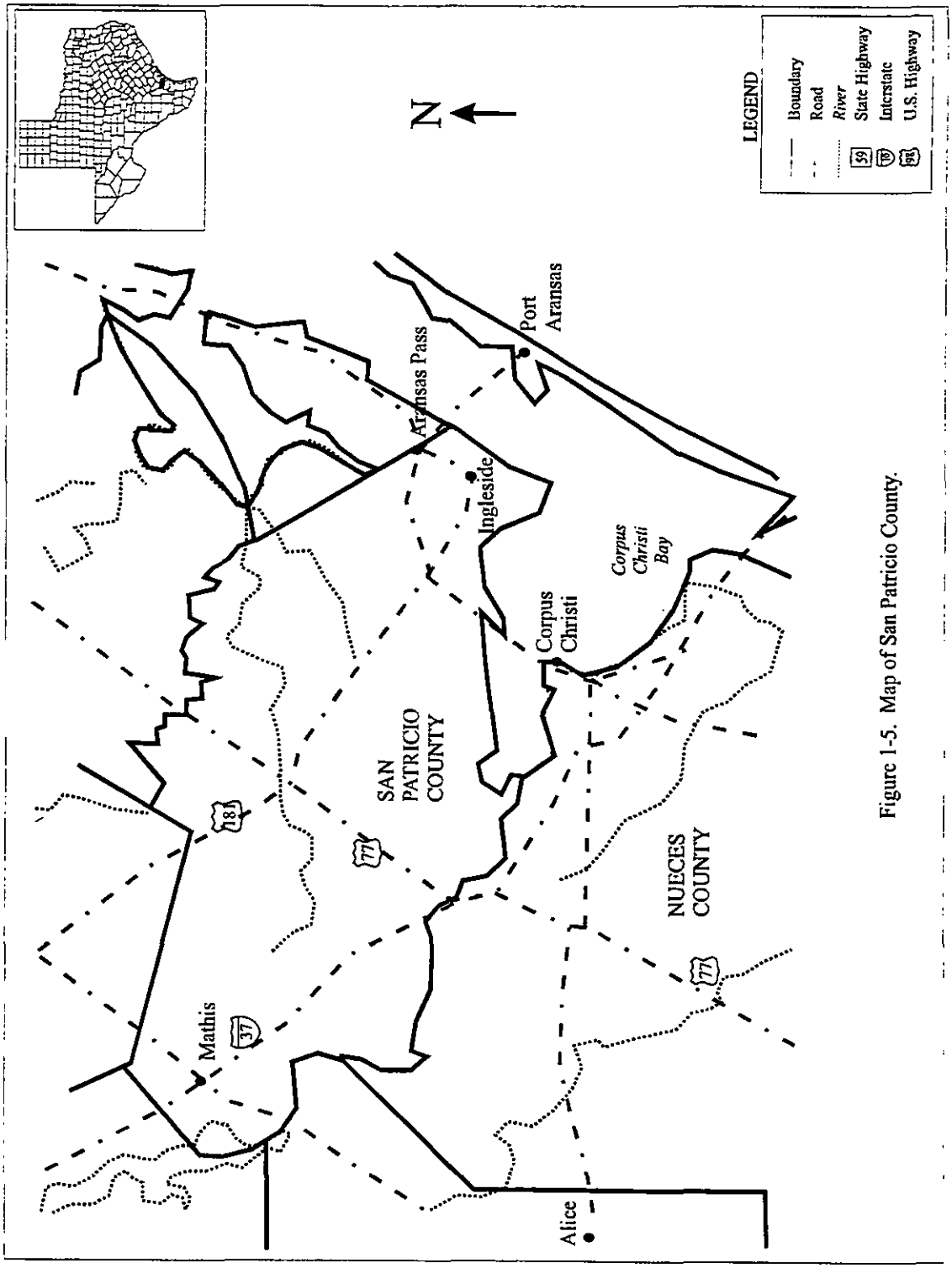


Figure 1-5. Map of San Patricio County.

been part of the county's economy since the early 1900's. The military also has had a significant presence in the Corpus Christi Bay area, in general, and more recently in San Patricio County.

Table 1-3 serves as an introduction to some general characteristics of the Coastal Bend Texas Study Area, San Patricio County and Mathis and Ingleside, in 1990.

1.3.3 Mobile Bay Study Area

The Mobile Bay study area, Baldwin and Mobile counties, is located in the southwestern portion of the Alabama (see Figure 1-6). The counties are opposite each other across Mobile Bay. The eastern portion of Baldwin County borders Florida and the western portion of Mobile County borders Mississippi. Their southern border is the Gulf of Mexico. These are the only two coastal counties in Alabama. Baldwin is the larger of the two counties in turns of square miles (and the largest in the State), while Mobile is larger in terms of population. Mobile County is the second largest county in the State in terms of population. Both counties were established in the early 1800's while still part of the Mississippi Territory. The city of Mobile is the county seat in Mobile County. Bay Minette is the county seat in Baldwin County. The study communities were Theodore in Mobile County and Gulf Shores in Baldwin County. (See Figure 1-7 for a map of the two counties.)

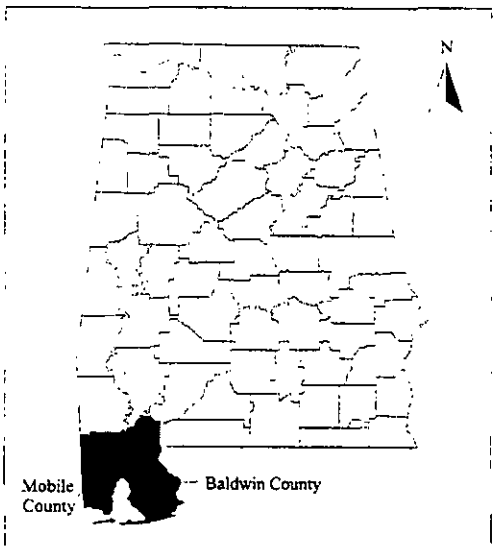


Figure 1-6. Mobile Bay study area.

Coastal resource-dependent industries in this area include tourism, marine recreation, commercial fishing, and, most recently, offshore gas. Large quantities of natural gas were discovered in Alabama's offshore waters in 1979. Baldwin County especially has a strong tourism economy and has a large retiree population. The important commercial fishing industry in the area is located in southeastern Mobile County. The Port of Mobile, the largest seaport in Alabama, is also in Mobile County. The military has had a long presence in the area. The build up and downsizing of military installations has handed the area some special challenges. The area's second port, Mobile Middle Bay Port, is the former Naval Station Mobile.

Table 1-4 serves as an introduction to some general characteristics of the Mobile Bay Study Area counties and communities in 1990.

Table 1-3. Coastal Bend, Texas: general characteristics, 1990.

Characteristic	San Patricio County	Ingleside	Mathis
Total Population	58,818	5,696	5,423
Age			
% Under 18	32.3%	33.3%	36.9%
% 65 Years and Older	10.4%	8.4%	10.8%
Households			
Total	18,776	1,867	1,481
Persons Per Household	3.10	3.05	3.63
Race (Percent)			
White	76.3%	83.1%	47.3%
Black	1.6%	1.2%	1.5%
American Indian, Eskimo, or Aleut	0.4%	0.6%	0.3%
Asian or Pacific Islander	0.3%	0.3%	0.1%
Other Race	21.4%	14.8%	50.7%
Hispanic Origin of Any Race (Percent)	50.7%	30.1%	88.4%
Educational Attainment (Persons 25 Years and Older)			
% High School Graduate or Higher	60.6%	59.9%	34.5%
% Bachelor's Degree or Higher	11.0%	9.7%	2.7%
Housing			
Total Number of Units	22,126	2,274	1,673
% Owner Occupied	68.3%	61.9%	69.7%
Employment (Persons 16 Years and Over)			
Civilian Labor Force	24,620	2,534	1,844
Employed	22,339	2,316	1,565
% Employed	90.7%	91.4%	84.9%
Unemployed	2,281	218	279
% Unemployed	9.3%	8.6%	15.1%

Source: U.S. DOC, BOC, 1999.

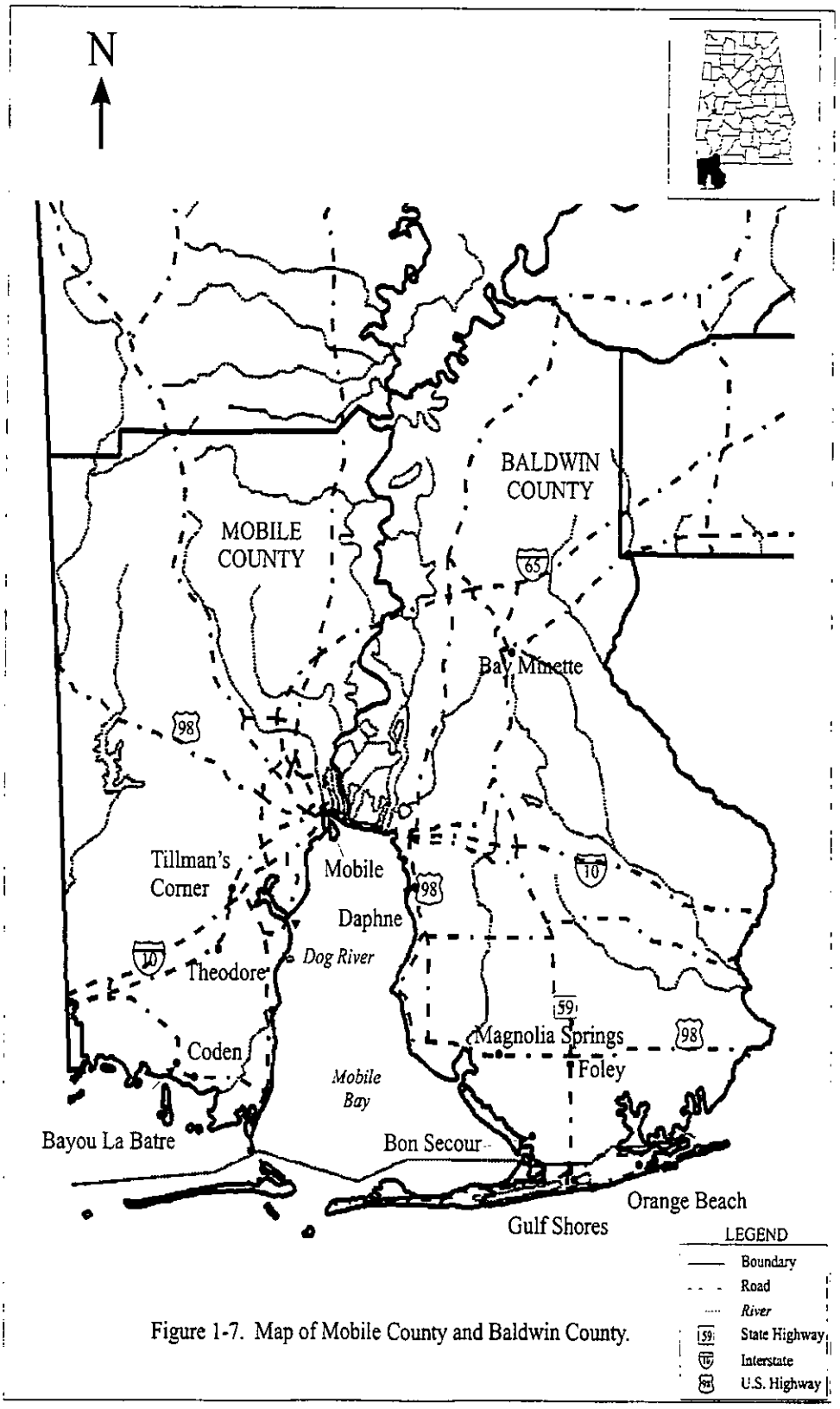


Figure 1-7. Map of Mobile County and Baldwin County.

Table 1-4. Mobile Bay, Alabama: general characteristics, 1990.

Characteristic	Baldwin County	Gulf Shores	Mobile County	Theodore CDP
Total Population	98,280	3,261	378,643	6,509
Age				
% Under 18	26.0%	17.0%	28.5%	29.6%
% 65 Years and Older	15.1%	26.1%	11.8%	9.3%
Households				
Total	37,044	1,435	136,899	2,247
Persons Per Household	2.62	2.22	2.71	2.86
Race (Percent)				
White	86.0%	99.4%	67.3%	74.2%
Black	12.9%	0.0%	31.1%	25.2%
American Indian, Eskimo, or Aleut	0.6%	0.2%	0.5%	0.3%
Asian or Pacific Islander	0.2%	0.2%	0.9%	0.3%
Other Race	0.2%	0.2%	0.2%	0.0%
Hispanic Origin of Any Race (Percent)	1.0%	0.6%	0.8%	0.3%
Educational Attainment (Persons 25 Years and Older)				
% High School Graduate or Higher	73.2%	87.3%	70.1%	60.7%
% Bachelor's Degree or Higher	16.8%	22.1%	15.5%	5.6%
Housing				
Total Number of Units	50,933	4,976	151,220	2,451
% Owner Occupied	78.4%	71.3%	66.8%	75.0%
Employment (Persons 16 Years and Over)				
Civilian Labor Force	45,480	1,222	170,321	3,048
Employed	43,005	1,190	155,065	2,840
% Employed	94.6%	97.4%	91.0%	93.2%
Unemployed	2,475	32	15,256	208
% Unemployed	5.4%	2.6%	9.0%	6.8%

CDP - Census Designated Place

Source: U.S. DOC, BOC, 1999.

1.4 Emerging Themes

From the brief introduction to the study areas emerge at least two themes which will re-emerge in later issue chapters. These themes are highlighted below and then revisited in the issue chapters and again in the synthesis of findings.

The first of the emerging themes is that there are similarities as well as dissimilarities among the study area counties/parishes. This is illustrated in Table 1-5 which provides a comparison of selected county/parish characteristics.

In terms of square miles, Baldwin County is the largest; San Patricio County is the smallest. Mobile County started out as the largest study area county in terms of population (118,363) and remains so. In contrast, the population in the other study area counties ranged between 24,000 and 32,400 in 1930. Baldwin County, in 1995, had about the same population size as Mobile County had in 1930. The population in Terrebonne Parish in 1930 was smaller than that in Lafourche Parish, but that changed in the 1950s. San Patricio County had the smallest population in 1930 and remained behind the others in terms of population in 1995. Baldwin County has a large retiree population in comparison to the others study area counties.

All of the study area counties are predominantly white; this has changed little over time. The population of Baldwin County has become increasingly white since 1960, while that of Mobile County has remained about the same. The proportion of white population decreased some in Lafourche and Terrebonne parishes, while San Patricio County experienced a 22 percent decline in white population between 1960 and 1990. San Patricio County also had the lowest proportion of blacks in 1960 and 1990.

Peak mining employment and earnings in all counties occurred in 1981 or 1985/1986. Peak employment occurred in 1995 for all study area counties, except Terrebonne Parish where it occurred in 1981. Peak earnings occurred in 1995 in Baldwin and Mobile counties, in 1981 in Lafourche and Terrebonne parishes, and in 1986 in San Patricio County. Peak mining employment and earnings was greatest among the counties in Terrebonne Parish.

All the counties had the same major employment sectors in 1995: services, retail trade, and government, although not always in the same order. Services was the common major source of earnings among the five counties. Other major sources varied by county but include government, retail trade, transportation and utilities, and mining (Terrebonne Parish).

The second emerging theme in the description of the study areas is that there are similarities as well as dissimilarlies within the study area communities and the counties in which they are located. One of the purposes of examining community-level impacts was to identify the similarities or differences between subcounty areas and the county. This theme is illustrated

Table 1-5. Comparison of selected characteristics of study area counties.

	Lafourche Parish	Terrebonne Parish	San Patricio County	Baldwin County	Mobile County
Sq. Miles	1,084.8	1,255.1	691.8	1,596.5	1,233.4
Farms					
Acreage (1000)					
1945					
1969	222	116	335	277	185
1997	205	100	435	309	169
	135	53	406	166	121
Population					
1930	32,419	29,816	23,836	28,289	118,363
1940	38,615	35,880	28,871	32,324	141,974
1950	42,209	43,328	35,842	40,997	231,105
1970	69,233	76,212	47,337	59,474	318,311
1990	85,788	97,048	58,818	98,922	379,135
1995	87,348	100,645	66,741	119,373	394,420
Age Structure					
1950					
0-19	44.7%	46.3%	46.7%	39.8%	33.8%
20-59	47.3%	46.0%	46.3%	49.0%	57.8%
60+	8.1%	7.7%	7.0%	11.2%	8.4%
1970					
0-19	46.1%	47.7%	46.3%	40.5%	41.8%
20-59	45.1%	44.6%	43.2%	44.3%	46.3%
60+	8.8%	7.7%	10.6%	15.1%	11.9%
1990					
0-19	33.5%	35.5%	35.7%	28.8%	31.6%
20-59	53.7%	52.6%	49.6%	50.7%	52.3%
60+	13.0%	11.9%	14.7%	20.4%	16.1%
Racial Composition					
1960					
White	87.8%	79.5%	98.1%	79.0%	67.7%
Black	11.8%	17.1%	1.8%	21.0%	32.1%
1990					
White	84.3%	77.4%	76.3%	86.1%	67.3%
Black	12.5%	16.5%	1.6%	12.9%	31.1%

Table 1-5. Comparison of selected characteristics of study area counties (cont'd).

	Lafourche Parish	Terrebonne Parish	San Patricio County	Baldwin County	Mobile County
Educational Attainment (Persons 25 Years and Older)					
1940 High School or Higher	10.1%	10.3%	22.6%	15.8%	22.4%
1970 High School or Higher	31.3%	35.6%	38.4%	40.6%	42.6%
1990 High School or Higher	56.2%	59.6%	60.7%	73.2%	70.1%
Peak Employment 1969 to 1995	35,357 1995	54,008 1981	21,499 1995	54,321 1995	206,917 1995
Peak Mining Employment 1969 to 1995	2,084 1981	9,600 1981	1,437 1986	271 1985	1,362 1981
Peak Earnings 1969 to 1995	$923.7 million 1981	$1,864 million 1981	$579 million 1986	$1,056 million 1995	$5,722 million 1995
Peak Mining Earnings	$90.8 million 1981	$500 million 1981	$53.5 million 1986	$8.1 million 1985	$51.7 million 1981
Major Employment Sectors 1995	Services Government Retail Trade	Services Retail Trade Government	Government Services Retail Trade	Services Retail Trade Government	Services Retail Trade Government
Major Earnings Sectors 1995	Government Services Transportation and Utilities	Services Mining Retail Trade	Government Manufacturing Services	Services Government Retail Trade	Services Manufacturing Government

Source: Tables 4-2, 4-3, 4-4, 4-5, 4-8, 4-9,4-13, 4-15, 4-17, 4-18, 4-21, 4-22, and LSU, 1996.

in Tables 1-1 through 1-3. Some of the communities studied reflect county-level characteristics. For example, the Schriever Census Designated Place (CDP), which by population accounts for about 5.1 percent of the county, is fairly similar to Terrebonne Parish according to the characteristics highlighted in Table 1-1. The proportion of children is similar (32.4 percent for the Parish and 31.1 percent for Schriever; the same number of persons per household for the Parish and the community (3.02); similar racial composition (77.4 percent white for the Parish and 78.8 percent white for the community).

Other communities are quite dissimilar to county-level characteristics. For example, Gulf Shores has a much larger proportion of elderly population and white population than the county in general. Household size is smaller, and educational attainment is higher in Gulf Shores than in the county in general. This illustrates that neither counties nor communities are homogeneous entities, although some tend to be more so than others.

1.5 Report Organization

The report is structured into eight sections and two appendices. A brief overview of each of the subsequent sections follows.

Section 2 presents an overview of the region's history since the late 19th century. Structured into three time periods (1870 to 1930; 1930 to 1965; and 1965 to the present), the section introduces several of the recurring themes that emerge again in later sections. These themes include transportation, federal policy, and changes in economies. The section includes highlights from the history of offshore oil and gas activity, but is not a history of the offshore industry.

Section 3 presents oil and gas activities in the Gulf of Mexico from the broad regional perspective and then the narrower view by State. Six oil and gas indicators are used: Sales volume of crude oil, sales value of crude oil, price of crude oil, sales volume of natural gas, sales value of natural gas, and price of natural gas.

Section 4 presents a discussion of economic and social trends in demographics, economic structure, personal economy, and social indicators in the three study areas. The section focuses on the study area counties or parishes and draws heavily from approaches to environmental and social impact assessments.

Section 5 presents the results of the statistical analyses of social and economic consequences of OCS oil and gas activities in the gulf. It examines the relationship of oil and gas activity indicators and the social and economic structures of the study area counties or parishes.

Section 6 addresses the fabric of the study communities from the land and resource use perspectives, referred to as landscapes. Five types of landscapes are highlighted: agricultural, industrial, maritime, leisure, and military.

Section 7 focuses on the evolution of education and work in the study communities. OCS oil and gas activity affected education and work in Gulf communities in the period of rapid industrialization that followed World War II. The section uses industrialization and institutionalization as the organizing mechanisms, highlighting three types of industrialization: coastal communities and industrialization in seafood and agricultural economics, internal communities and industrialization in agricultural economies, and communities with no industrial activity.

Section 8 synthesizes the findings from the issue areas examined and compares and contrasts them with appropriate literature drawn from a wide range of topics. It also identifies unanswered questions relating offshore oil and gas activities to social and economic changes

Appendices. Appendix A describes the methodology used to complete the study. Appendix B provides statistical tables for the five Gulf of Mexico States and the nation.

2.0 The Gulf Coast Region: A Historical Overview 1865 to the Present

2.1 Introduction

This section presents an overview of the region's history since the late nineteenth century. This is the historical context within which the impacts of offshore oil and gas development occurred. The section is structured into three time periods (1870-1930; 1930-1965; and 1965-present). While the focus of the study is the period since 1930, the historical context begins in the late 1800's in order to set the stage for what follows in the study's period of interest. The section introduces several themes that recur in later sections. Key among these are: the region's attributes of nature, of the population, and of the social and political structure; global forces felt at the local level; shifts in economies over time; Federal policies and their implementation at the local level; and manifestations of tourism and leisure activities. The section outlines major events in the development of the offshore oil and gas industry in the GOM, in order to highlight them and to place them in the greater historical and regional contexts. A time line of simultaneously occurring events in world oil and the Gulf of Mexico region (both oil and non-oil events) is shown in Table 2-1.

2.2 The First New South: 1870 to 1930

2.2.1 The Railroad and Economic Development

The initial economic breakthrough of the gulf region after the Civil War occurred as a result of the railroad. The railroad was the great arbiter of late nineteenth century American development. Those places located on the rail line prospered, those off the line faded away. It was not enough to have tracks by every front door; they had to lead somewhere important, like a major city or port. Before the Civil War, the South built hundreds of miles of track; during the 1850's, several southern States outpaced their northern rivals in rail construction. While northerners built a railroad system, southerners built railroads: lines with dozens of different gauges extending from city to farm but not often to other cities. Not until the mid-1880's, under the direction of northern entrepreneurs, did southern railroads finally receive a uniform gauge. The massive destruction during the Civil War and the difficulty of constructing lines in an impoverished region after the war hampered southern economic development. By the 1880's, with the help of northern and foreign capital, rail lines penetrated the Gulf Coastal Plain.

The arrival of railroads freed lumber companies from the numerous rivers near the gulf. Instead of buying a few hardwoods from farmers, lumber companies hired scores of workersand cut far more trees off the land. By the 1890's, it was not unusual to see sawmills popping up every 5 miles or so alongside the railroad tracks. In 1870, the South produced 11 percent of the nation's lumber; by 1910, the South's share exceeded 45 percent even though vast stands of timber were being harvested in the Pacific Northwest (Williams, 1989; Baker, 1983; Hickman, 1962; and Perloff, 1960).

Table 2-1. Time line.

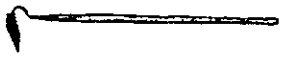
	1870-1930	
World Oil-Related Events	1870 — John D. Rockefeller formed Standard Oil Company 1882 — Thomas Edison demonstrated electricity 1896 — Henry Ford built his first car 1903 — Wright Brothers' first flight	1907 — First drive-in gasoline station opened in St. Louis 1908 — Oil discovered in Persia; led to Anglo-Persian (later British Petroleum) 1914-1918 — World War I and mechanization of the battlefield
Gulf Of Mexico Region	**The First New South**	
	Railroads By 1880s, Gulf Coastal Plain served by rail lines resulting in among other things: Growth of the lumber industry Tourism and industrial (cigar making) development in Florida Gulf Coast of Texas linked to northern Texas (1873) and by the late 1870's, Houston connected to St. Louis and the East Coast	Agriculture  1880s — wheat farming adapted to rice growing 1894 — boll weevil infestation which led eventually to the emergence of peanuts and soybeans as cash crop alternatives Boom-bust cycle of livestock in Texas (mid 1880s)
Offshore Oil and Gas Industry	1901 — first major oil reserve discovered at Spindletop (Texas) 1910 — Gulf Oil successfully bid for oil leases on Caddo Lake in northwestern Louisiana and, along with Summerland, California, started the offshore technology for the oil industry	Late 1920's — Texas Company (which became Texaco) leased large tracts of marsh from the Louisiana Land and Exploration Company and submerged lands under continuous lakes and bayous from the State of Louisiana

Table 2-1. Time line (cont'd).

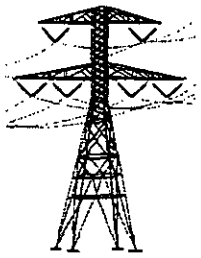
	1930-1934	
World Oil-Related Events	1932 — Oil discovered in Bahrain 1933 — Franklin Roosevelt became President of the United States Adolf Hitler became Chancellor of Germany Standard of California won concession in Saudi Arabia 1934 — Gulf and Anglo-Iranian gained joint concession in Kuwait	
	The Federal Era	
Gulf Of Mexico Region	1933 — Agricultural Adjustment Act (AAA) passed initiating the transformation of southern agriculture; displaced farm laborers moved first to nearby towns/cities and then after World War II, to northern cities Work Progress Administration (WPA) and Public Works Administration (PWA) provided southern communities with infrastructure (e.g., sewer and water) and farm-to-market asphalt roads; WPA assisted commercial fishing industry	Rural Electrification Administration extended electricity into rural areas of Alabama, Mississippi, and Louisiana 
Offshore Oil and Gas Industry	1930 – Discovery of East Texas Field; triggered regulatory mechanism in place until 1973 1933 — submersible drilling barge introduced by the Texaco Company; this was the technological breakthrough that facilitated exploration in shallow coastal waters First attempt to drill an offshore well (on a Louisiana state lease)	

Table 2-1. Time line (cont'd).

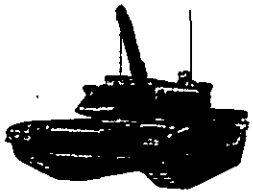
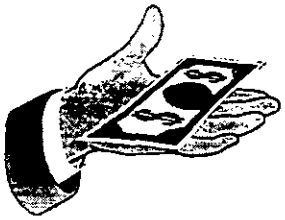
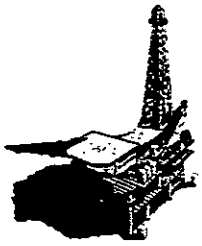
	1935-1939
World Oil-Related Events	1935 — Mussolini invaded Ethiopia; League of Nations failed to impose oil embargo 1936 — Hitler remilitarized Rhineland and prepared for war, initiated a major synthetic fuels program 1938 — Oil discovered in Kuwait and Saudi Arabia 1939 — World War II began with German invasion of Poland 
	The Federal Era (cont'd)
Gulf Of Mexico Region	1935 — Wagner Act passed giving Federal approval to organize labor National wage and labor standards imposed; southern economy began to be integrated into the national economy Roosevelt administration made a significant effort to improve the southern economy 
Offshore Oil and Gas Industry	1936 — State Mineral Board created in Louisiana to lease waters adjacent to the State 1937 — First well to produce hydrocarbons from the Gulf of Mexico (Creole Field off of Louisiana) 1938 — First platform in the open Gulf; drilling support for crew provided from shore 

Table 2-1. Time line (cont'd).

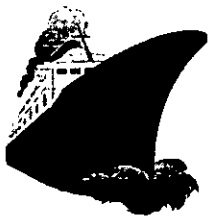
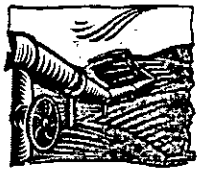
	1940-1944	
World Oil-Related Events	1940 — Germany overran Western Europe United States put limits on gasoline exports to Japan	1941 — Japan attacked Pearl Harbor
Gulf Of Mexico Region	**The Federal Era (cont'd)**	
	For strategic, climate, and political reasons, many defense installations and military bases located in the South Growth of shipbuilding and other war-related activities along the Gulf Coast resulted in dramatic population increases, racial tensions and riots, and improved road systems 	Economic boom from World War II Consumer spending power increased among civilian population Manpower shortages and federal agricultural policies accelerated the mechanization in the Gulf Coast States
Offshore Oil and Gas Industry	1941 — 25-mile stretch of pipeline across Lake Pontchartrain used to move oil from well to refineries. Early lay-barge technique used to position and assemble a continuous pipeline in the marine environment 	Offshore living quarters and concentrated work periods increased Cost of equipment led to 24-hour per day operations as a means to return investment quickly

Table 2-1. Time line (cont'd).

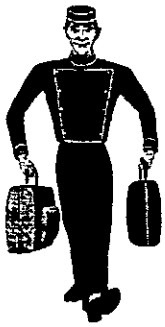
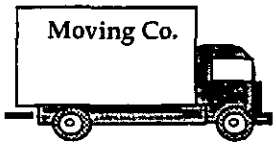
	1945-1954	
World Oil-Related Events	1945 — World War II ended with defeat of Germany and Japan 1948 — Israel declared independence 1950-1953 — Korean War 1951 — Mossadegh nationalized Anglo-Iranian in Iran (first postwar oil crisis) New Jersey Turnpike opened	1952 — First Holiday Inn opened 
	The Federal Era (cont'd)	
Gulf Of Mexico Region	Nearly one of every five southerners left the region during the 1940s Growth of black urban populations 	Attracted by incentives pioneered in Mississippi in 1936, low wage, low skill industries opened in and around small southern towns Progressive, business-oriented governments emerged in several Gulf Coast cities 1954 — Brown vs. Board of Education of Topeka, Kansas
Offshore Oil and Gas Industry	1945 — Executive Order issued by President Truman asserting Federal ownership of the continental shelf 1946 —Platform constructed in the open Gulf; drilling crews rotated from floating hotels 10 miles away 1947-1950 — Decisions by the U.S. Supreme Court known as the Tideland Cases established the legal rights of the Federal government over all U.S. offshore lands	1953 — Outer Continental Shelf Lands Act authorized the Secretary of the Interior to lease through competitive bidding, the lands beyond 3 miles for the development of oil, gas, salt, and sulfur resources and to administer the leases; Bureau of Land Management and U.S. Geological Survey shared leasing responsibility 1954 — First OCS lease sale held in Gulf off of Louisiana (almost 200 structures in place in Federal waters by the time first lease sale was held) Submerged Lands Act passed (Assigned states title to offshore lands within 3 miles of the shoreline. Supreme Court later ruled that for Texas and the west coast of Florida, states hold title to 3 marine leagues.)

Table 2-1. Time line (cont'd).

	1955-1965
World Oil-Related Events	1955 — Soviet oil export campaign began First McDonald's opened in suburban Chicago 1956 — Suez Crisis (second postwar oil crisis) 1959 — Eisenhower imposed import quotas 1960 — OPEC founded in Bagdad
Gulf Of Mexico Region	**The Federal Era (cont'd)** 1955-1956 — Bus boycotts 1956 — Federal Aid Highway Act and development of the interstate highway system 1959 — *The Golden Coast* published, one of the earliest references to Florida to Texas as a region Wider use of air-conditioning 1964 — Civil Rights Act 1965 — Voting Rights Act Infusion of Federal monies Decline of shipping and shipbuilding industries in several Gulf ports
Offshore Oil and Gas Industry	1956, 1957, 1958 — lease sales blocked by Florida and Texas 1956 — Coast Guard promulgated safety regulations to offshore structures 1959 — Lease sale off Florida Improved drilling vessels introduced

Table 2-1. Time line (cont'd).

	1965-1979	
World Oil-Related Events	1965 — Vietnam War buildup 1967 — Six Day War; Suez Canal closed (third postwar oil crisis) 1968 — Oil discovered on Alaska's North Slope 1969 — Qaddafi seized power in Libya Oil discovered in the North Sea Santa Barbara oil spill 1973 — Yom Kippur War; Arab Oil embargo (fourth postwar oil crisis) Alaskan pipeline approved 1974 — Arab Embargo ended Nixon resigned	1975 — Automobile fuel efficiency standards established in the United States First oil came ashore from North Sea South Vietnam fell to communists 1977 — North Slope Alaskan oil came to market Buildup of Mexican production 1978 — Anti-Shah demonstrations, strikes by oil workers in Iran 1979 — Shah went into exile; Ayatollah Khomeini took power 1979-1981 — Panic sent oil from $13 to $34 a barrel (fifth postwar oil crisis)
Gulf Of Mexico Region	**The Sunbelt Years**	
	Rapid growth of tourist industry Net migration into the south, beginning in the 1970s, although rural area and some areas along the Gulf Coast experienced a net out migration Completion of the interstate system Natural Gas Policy Act of 1978 Transformation of race relations overtook the Gulf Coast states Republican party experienced a major resurgence first in Texas and Florida and then in Alabama, Mississippi, and Louisiana Rise of the religious right	
Offshore Oil and Gas Industry	1971 — Gulf OCS oil production peaked and then began an 8-year decline 1978 — Outer Continental Shelf Lands Act Amendments 1979 — Mobil Oil spudded a well in Alabama state waters with natural gas	

Table 2-1. Time line (cont'd).

	1980-1996	
World Oil-Related Events	1980 — Iraq launched war against Iran 1982 — OPEC's first quotas 1986 — Oil price collapse 1988 — Ceasefire in Iran-Iraq War 1989 — *Exxon Valdez* tanker accident off Alaska 1990 — Iraq invaded Kuwait UN imposed embargo on Iraq; multinational force dispatched to Middle East (sixth postwar oil crisis) 1991 — Gulf War Kuwaiti oil fields set afire Breakup of the Soviet Union; Boris Yeltsin elected President of Russia	1992 — Bill Clinton elected President 1993 — Israel signed a peace accord with the PLO 1994 — Israel signed a peace treaty with Jordan 1996 — Yeltsin and Clinton reelected 1997-1998 — UN weapons inspection crisis in Iraq Iraq smuggled oil out of country 1998 — Financial crisis in Japan affects demand for oil (Oil stocks remain high, OPEC countries cut production levels)
	The Sunbelt Years (cont'd)	
Gulf Of Mexico Region	Sunbelt economy produced an uneven development pattern — older cities such as Mobile and New Orleans faltered while newer cities, especially those in Florida experienced a more successful transition Regionalization of the national economy (e.g., banking and the airline industry) affected the south Seaside development in the Florida Panhandle marked the beginning of upscale development Agriculture persisted	Legalized gambling moved offshore Steady supply of cheap labor fueled the economy Migration to the Gulf Coast receded in relation to growth of metropolitan areas such as Charlotte, Jacksonville, Nashville, and Birmingham Charges of environmental racism surfaced in rural areas including the black belts of Alabama and Louisiana Increased immigration from the Caribbean and South and Central America
Offshore Oil and Gas Industry	1981 — Louisiana Offshore Oil Port (LOOP) operations began Annual gas production peaked initially (peak matched again in 1990) 1982 — Gulf OCS oil production increased until 1986 and then declined for the next 4 years 1983 and 1984 — Three year moratorium on drilling in the Eastern Gulf of Mexico Planning Area south of the 26 degrees north latitude and east of 86 degrees west longitude Late 1980's-early 1990's — Lease reassignments increased	1990 — President Bush's OCS moratorium placed the southwest Florida coast off limits to oil and gas leasing until 2000 1991 — Executive Order 12777 implemented the Oil Pollution Act of 1990 and expanded the Department of the Interior's authority over oil-spill contingency planning to include all offshore facilities including state facilities, except for those associated with deepwater ports Increasing concern over oil spills resulting from aging pipeline network Deepwater development

Northern companies dominated the southern timber industry. During the early 1880's, the Southern Pacific Railroad opened up vast resources of forested wealth along the Gulf Coast of Louisiana and Texas. Lake Charles, La. became a center of lumber producing and marketing. In Texas, farmers had considered the pine tree a nuisance; but the arrival of the railroad and the disappearance of eastern pine sources changed that perception dramatically. By 1907, Orange and Jefferson counties in Texas were among the leading lumber producing areas of the United States (Calvert and De Leon, 1990).

Lumber entrepreneurs followed the pattern initiated by southern textile mill owners. They built company towns, complete with churches, housing, schools, and stores. The predominantly male workforce, one-third of whom were black (occupying the most menial positions), came from the impoverished surrounding rural towns and farms for the most part. The rapid growth of the timber industry in Mississippi, Louisiana, and Texas drew migrants, mostly blacks, from other parts of the South. Communities in Virginia, the Carolinas, and Georgia experienced the out-migration of large numbers of local blacks who crowded onto trains bound for the piney woods of Mississippi or points west. The migration was all the greater because segregation had cut off traditional employment opportunities for blacks in the Southeast.

The migration had a significant social impact. Young men comprised the vast majority of migrants as sawmills and lumber camps rarely employed women or children. The migration disrupted family life and created a mostly male culture on the timber frontier. In those Gulf Plain counties where the new timber industry arose, lynchings flourished. In these places, whites and blacks did not know each other, blacks had no whites to vouch for them, and the frontier environment encouraged the violent settlement of disputes (Brundage, 1993).

Black men filled the lonely off-work hours by mixing ragtime and blues on cheap pianos. When blacks left the lumber camp (and few stayed more than 1 year), they often left for nearby cities, especially New Orleans which had become a black Mecca by the 1890's. There, amid a diverse black population, blues and ragtime blended with music from the Caribbean, religious music, minstrelsy, and marching music to create jazz. New Orleans trumpeter Charles "Buddy" Bolden became the first nationally recognized jazz artist in the late 1890's (Schuller, 1968; Oliver, 1969; and Marquis, 1978).

As fast as black workers left the lumber camps, others replaced them. In 1880, much of the region's virgin forest still stood with mighty hardwood trees of 4 to 8 feet in diameter soaring 150 feet or more in the sky. As the train track penetrated the hardwood and yellow pine forest, virgin timber disappeared as the timber companies practiced ruthless clear-cutting with the approval of local landlords who also profited from the cutting. By 1900, about one-fifth of southern industrial workers were employed in some aspect of the timber industry.

The result diminished a key southern resource and added significantly to the problems of erosion and flooding. The companies left behind a landscape littered with millions of gray

stumps. Towns vanished. A visitor to a Louisiana lumber town described the scene 6 months after the mill had cut its last log: "the big sawmill that for twenty years had been the pulsing heart of this town, was already sagging on its foundations, its boilers dead, its deck stripped of all removable machinery" (quoted in Williams, 1989). The hotel, bank, and stores stood empty, ghostly reminders of what had been; and grass literally grew in the streets. This was not the first time dreams of economic development and wealth had left the Gulf Coast seduced and abandoned; nor the last.

Exploitation of the gulf's natural resources became a pattern long before the railroad and northern timber interests entered the region. Planters migrating from the worn-out farms of the Southeast during the 1820's and 1830's settled in the Mississippi Delta, southern Louisiana, and east Texas and mined the land. Cotton, the major crop of the area, leeched the soil of nutrients and abetted erosion problems in low-lying districts. After the Civil War, the cotton kingdom expanded its domain as a cash-poor South cultivated its only cash-sure crop to overabundance on marginal soils requiring huge injections of fertilizers. The soils directly along the gulf fell into this latter category and attracted subsistence black and white farmers who had scraped a few dollars together to buy small farms on poor lands that no one wanted. Well into the early 1900's, these Gulf Coast lands showed the highest percentage of land ownership in the South -- 70 percent (U.S. DOC, BOC, 1914). The figure reflected less the prosperity of a yeomen farmer class than the poverty of the soil. Technological improvements also stimulated the cultivation of cotton, particularly the much-sought-after sea island variety. The Gulf Coast areas of Florida proved especially suited for the growth of that strain once improvements in cotton gins solved harvesting problems (Paisley, 1976).

The high rate of land ownership also indicated the difficulty landless farmers faced in the Deep South during the late nineteenth century. As low cotton prices and high food, equipment, and fertilizer costs drove small landowners to bankruptcy and foreclosure, large tracts of land fell into fewer hands and eventually into corporate ownership, such as the British-owned Delta and Pine Land Company in early twentieth-century Mississippi. Opportunities for purchasing fertile land diminished. Small landholders were therefore pushed to marginal lands, such as the Gulf Coastal Plain.

Cotton boomed particularly in the counties along the Texas Gulf Coast after the Civil War when better railroad and shipping connections to New Orleans eased the marketing of the crop. The rapid expansion of the cotton kingdom into Texas exacted a heavy price with the appearance in 1894 of the boll weevil, an especially resilient pest that chewed its way from Texas eastward devastating the major livelihood of the South's farm population. In the long-term, the boll weevil produced a positive result as it forced farmers to experiment with different crops. Peanuts and soybeans emerged as cash-crop possibilities from such experimentation and, before long, their empire extended almost as far as the cotton kingdom. Peanuts and soybeans were much kinder to leechable southern soils. Farmers were so thankful to find such alternatives that civic leaders in the south Alabama town of Enterprise erected a statue to the boll weevil for its role in "leading" farmers to the new cash crops (Fite, 1984).

It was well into the twentieth century before peanuts and soybeans replaced cotton as the Deep South's prime money crop. In the meantime, a new crop emerged on the prairies of southwestern Louisiana and southeastern Texas: rice. The story of rice is similar to much of the economic development of the gulf region during the late nineteenth century in the sense that outsiders, usually from the North, initiated the activity. The Southern Pacific Railroad penetrating into Louisiana and Texas proved the catalyst for rice cultivation. Midwestern farmers migrated to the rich prairie lands of southwestern Louisiana during the early 1880's and adapted the technology of midwestern wheat farming to rice growing. Within a few years, the highly mechanized Gulf Coast rice industry eclipsed the older areas. The contrast between the efficient midwestern farmers and their Cajun neighbors who also cultivated rice was stark. The Cajuns depended on rainfall for water and used primitive farm implements. The midwesterners introduced mechanical reapers, binders, steam threshers, and irrigation networks.

By the mid-1890's, the Louisiana prairie had been transformed from barren land populated with Cajuns, cattle, and a few stands of rice into a booming, irrigated, mechanized rice-growing region. A Southern Pacific promotional pamphlet in 1900 referred to southwestern Louisiana as "a Northern village on Southern soil." All along the Southern Pacific tracks small towns grew -- Lake Charles, Welsh, Gueydan, and others. By 1900 roughly 7,000 northerners, mainly from Iowa, Illinois, and Nebraska had settled in the area. The mechanized areas of Louisiana produced over 2.7 million barrels of rice in 1899, compared with the much more extensive conventional cultivators who produced just over 1 million barrels. The region was promoted through *The Rice Journal and Gulf Coast Farmer*, a publication that survives today as *The Rice Journal*.

The rice frontier expanded into the Gulf Coast areas of Texas down to the Mexican border. In the midst of a field south of Beaumont, Anthony Lucas came upon Spindletop in 1901, and soon the Texas prairie boomed with cattle, rice, and oil (Phillips, 1951; Dethloff, 1970; and Bailey, 1971).

While rice and oil were newcomers to the Texas Gulf Coast region, cattle had been around since the Spanish era, but enjoyed a spectacular boom in the post-Civil War era. One result of the longhorn cattle bonanza was to spread a tick-borne fever from southern Texas through the lower South and Midwest. Disease-bearing ticks were common throughout the lower South well into the twentieth century and inhibited the development of a high-grade cattle and dairying industry. Disease problems, as well as the inferior quality of longhorn meat, contributed to the rapid decline of the cattle industry in southern Texas after the late 1880's.

Another boom-bust cycle in livestock occurred in the Rio Grande plain of Texas, an area of several counties bounded by the San Antonio River, the Gulf of Mexico, and the Rio Grande. By the mid-1880's more than 3 million sheep grazed the area for markets in Mexico, Europe,

and the Texas interior. Overgrazing, droughts, freezes, and the plummeting price of wool dealt a death blow to sheep ranching in southern Texas.[1]

The railroad made many of these activities possible, but even good and relatively inexpensive transportation connections could not overcome market or natural forces that dashed several agricultural and industrial enterprises in the gulf region. Florida proved to be an exception, because there the railroad not only initiated economic development, but sustained it.

Florida's odd shape and its location on the periphery of the United States contributed to its economic isolation until well after the Civil War. Again, as in so much of the Gulf Coast's development, an entrepreneur from outside the South seized an opportunity to make a fortune in a struggling region. Henry Plant, a Connecticut Yankee, extended a railroad along the Gulf Coast into central Florida in the 1880's. The system, eventually called the Atlantic Coast Line Railroad, connected Florida by rail with the North for the first time. Plant's Tampa Bay Hotel (now the University of Tampa), with its Moorish architecture and ornate furnishings, attained renown for its accommodations and service. By the 1890's, the Louisville and Nashville Railroad extended its line east from Pensacola giving the Panhandle access to the rest of Florida to the east and the lower South to the west. These developments, along with Henry Flagler's railroad along the State's Atlantic Coast, enabled Florida to jump from last in railroad mileage in the South in 1890, to fifth by 1900.

At the other end of the Gulf, the railroad played a role in the development of Houston. In 1873 the Missouri, Kansas and Texas Railroad joined the Houston and Texas Central to link the State's Gulf Coast to north Texas. By the late 1870's, railroads connected Houston to St. Louis and the East Coast. By the early 1900's, the combination of railroads, entrepreneurial activity, and a major hurricane had thrust Houston ahead of rival Galveston as the major gulf port in Texas. Energized by oil, railroads, and the stroke of nature, Houston civic leaders quickly promoted the building of a channel that would accommodate ocean going vessels. With Federal assistance, Buffalo Bayou was transformed into the Houston Ship Channel, a 55-mile-long and 30-foot-deep watercourse opened in 1925. The Channel attracted scores of industries along its banks and turned Houston into a major port (McComb, 1981 and 1986). By 1950, Houston was the South's largest city.

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[1] For discussions of the livestock industry in the Texas gulf region, see Lewis Atherton, *The Cattle Kings* (Bloomington, Ind., 1961); Paul H. Carlson, *Texas Woollybacks: The Texas Sheep and Goat Industry* (College Station, 1982); Tamara Miner Haygood, "Cows, Ticks, and Disease: A Medical Interpretation of the Southern Cattle Industry," *Journal of Southern History*, 52 (Nov. 1986), pp. 551-64.

2.2.2 Early Oil and Gas Industry Activities

Another industry had its early roots during this same time period. Non-commercial production of oil began in the vicinity of Nacogdoches in east Texas during the 1860's, but there was little or no market for the substance and not a good way to get it there if a market had existed. Commercial production was first established in central Texas, at Corsicana, during the late 1890's. This development attracted some suppliers and skilled workers from the older producing regions in the East and Midwest, investors and entrepreneurs, and offset the widely-held belief that Texas did not contain significant amounts of oil. Several decades after the initial oil well in Nacogdoches, Patillo "Bud" Higgins and his partner, Anthony Lucas, a military engineer familiar with the geologic properties of salt domes, surmised that great reservoirs of oil were trapped beneath the giant salt domes west of Beaumont. Borrowing money from a variety of sources, particularly from the Mellon family in Pittsburgh, they hired a small drilling company from Corsicana to bring a rotary drilling rig to a salt dome known as Spindletop. On January 10, 1901, their speculation and the Mellons' faith were rewarded. The breakthrough discovery was the beginning of production from the Spindletop salt dome. Subsequently, exploration spread to other visible salt domes along the coast, as far to the west as Corpus Christi.

By the end of the first decade of the century, wildcatters had located additional salt dome fields in the general vicinities of Beaumont and Houston, supplying feedstocks for the growing refining industry in that area. In the second decade, oil and gas discoveries were made in north Texas and natural gas was found in the Texas panhandle. Pipelines carried crude oil from north Texas to coastal refineries, providing high gravity and low-sulphur crude oil, which yielded more light fractions than the cut-oil of the coast or Mexican oil. Within several years of the Spindletop discovery, hundreds of oil companies were incorporated, including the predecessors of Mobil, Gulf, Exxon USA, and Texaco. The Spindletop discovery focused attention on the potential of Texas and Louisiana coastal marshes for oil.

By 1905, successful oil wells had been drilled surrounding Caddo Lake near Shreveport, La. In 1910, the Board of Commissioners of the Caddo Levee District advertised a lease sale for the lake bottom. The lease was awarded to Gulf Oil Company, which paid $30,000 for drilling rights to 8,000 acres. Development of Caddo Lake required the solution to several technical problems. These included increasingly reliable blowout preventors for the high pressure reservoirs, platforms built at the drilling site, drilling equipment brought to the site by barge, and underwater pipelines connecting the production wells to one of four gathering stations on the lake. By 1926, Gulf Oil had 3 tugs, 10 barges, a floating pile driver, and 36 small boats in service on the lake. The Caddo Lake experience, coupled with the first over water drilling in 1896 at Summerland, California, are cited as the start of worldwide offshore oil and gas technology (Gramling and Brabant, 1984; and Gramling 1995).

In the late 1920's, the Texas Company (which later became Texaco) leased large tracts of marsh from the Louisiana Land and Exploration Company and submerged lands under

continuous lakes and bayous from the State of Louisiana. Searching for solutions to the exploration and development problems led to the introduction of the submersible barge in 1933 (Gramling, 1995). A submersible barge supports a drilling rig and its equipment, is towed to its location, and submerged using a number of vertical or horizontal pontoons which are flooded when the rig is positioned for drilling. It is designed to be used close to shore. The functions of the submersible barge were replaced by jackup rigs, which were introduced in the 1950's. It was also the forerunner of the semisubmersible drilling rigs first used in the 1960's.

In Texas, major discoveries were made in the central part of the State and in the Permian Basin of western Texas and eastern New Mexico. These discoveries increased reserves and feedstocks greatly during the 1920's. Producers in the coastal region participated in these discoveries and also learned techniques of field extension, deeper drilling, and workovers to boost production from old fields. By 1929, only the shortage of pipeline capacity prevented the swamping of crude oil markets with production from these new areas. In that year, the opening of the Oklahoma City and Van fields overtaxed capacities, sending crude oil prices to the lowest levels in a decade. The following year, the discovery of the vast East Texas field, and its rapid development, forced oil prices to record lows, often below 50 cents per barrel on short-term purchases. Efforts by the Texas Railroad Commission to restrict production in the interest of limiting economic waste proved futile until the mid-1930's, when enabling Federal and State legislation, and improvements in production technology, placed practical power to restrict and allocate production in the hands of the regulatory body.

As the east Texas field went on-line, out-of-control, and then, came under regulation, significant discoveries were made in other parts of Texas. Important new discoveries included the Conroe and Old Ocean fields in the upper gulf, the lower gulf area, and the Permian Basin. Natural gas flowed from the Panhandle to midwestern cities, and from southwestern Texas to the upper gulf region.

Interest in the possibility of offshore oil fields followed the Spindletop discovery. In January 1902, the *Houston Post* published a front-page drawing that depicted a river of oil beginning in the mid-continent region and flowing down into the GOM, rising to the surface at what they probably thought was the continental shelf. Actual drilling began in 1917, on a platform in Black Duck Bay, off the Goosecreek field. Production was scant, so there was no rush to drill in the near-shore area, especially because more prolific production was being found in Brazoria County onshore. Five years after the first well, offshore leasing began, but with no substantial activity, probably because of large strikes of high-gravity crude in central Texas, near Mexia. There is no record of additional offshore drilling until 1939, when a second offshore well was drilled at Sabine Pass, Tex., in response to the initial gulf well off Louisiana the year before (Kreidler, 1997).

2.2.3 Social and Political Structure

The economic development that occurred along the Gulf Coast from the Civil War to World War I had remarkably little impact on the social structure or political culture of the affected communities, counties, and States. Outsiders, including railroad companies, timber magnates, and entrepreneurs played a major role in developing the Gulf Coast. Profits flowed out of the region to headquarters and investors located elsewhere. Reinvestment occurred in infrastructure or machinery required to keep operations going. Often, the outsiders sought local leaders as partners (usually junior partners) or as allies to secure land or legislation to facilitate an enterprise. Except in the cigar factories of Tampa, and later in the oil industry, most workers in these enterprises possessed low skill levels. They were often transients with little stake in the communities and always they were divided by race. The South's changing electoral procedures that established residency, literacy, and other requirements limited the franchise for both blacks and whites. Voter participation plummeted throughout the South during and after the 1890's. White solidarity and white supremacy were the controlling factors of southern politics, and the profits from economic development were shared by relatively few (Rabinowitz, 1992).

Poor whites did not share in this prosperity. Instead, some of them immersed themselves in the recreation of the South's periodic political circuses. Colorful demagogues, spewing racism and tobacco juice, roamed the region garnering votes by the bucketful and doing relatively little once they were elected. In the one-party, Democratic South of the late nineteenth and early twentieth centuries, the politician who put on the best show most often won.

Outside investors understood the show and disregarded it accordingly. For all the venom directed toward northerners, these political leaders understood basic economics: in a poor region, you look for help anywhere you can. At the same time, the economic development fostered by outside interests must not upset the racial or class status quo.

So the South could modernize without changing its traditional political culture that rested on the dominance of county elites and the promotion of white supremacy and segregation. They could present the appearance of an activist government by donating millions of acres of open lands to railroads as an incentive to open up new areas for development, but they would not use that same government to display a similar largesse toward education, social welfare, or public health. Those expenditures not only threatened the racial and class status quo, but they often required higher taxes. If the South was an exploited region in the late nineteenth and twentieth centuries, with most of its wealth and profits distributed elsewhere, southern leaders were active accomplices, while sharing, but rarely distributing the profits from modern urban and industrial growth. Up North, urban and industrial development often resulted in liberal and reformist leadership; in the South, economic development reinforced the status quo. As late as 1941, two University of North Carolina researchers wrote in *Sharecroppers All* that "most Southern communities are essentially feudalistic" (Raper and Reid, 1941).

Although southerners experienced marked economic advancement during the interwar years, the region's political culture supported Raper and Reid's assessment. Education appropriations increased but still paled in comparison with expenditures in northern States. Racial differentials remained staggering. Southern States provided little support, for example, for the training of black teachers. Louisiana, with a large black population, had 200 high schools for whites and 3 for blacks, according to a 1923 survey. In 1930 the South spent $12.97 for each black pupil compared with $44.31 for white students. The average salaries for black teachers were slightly more than one-third those of white teachers. Overall, the South's per capita expenditures for public schools were scarcely half the national average (Anderson, 1988).

Moreover, the county and rural elites who dominated southern politics placed a low value on public education. Ideas and intellectual stimulation implied the importation of outside values, of different ways of looking at things. These were not attributes southern leaders wished to cultivate. As fierce defenders of the status quo, they did not encourage or tolerate dissent. Also, the leaders understood that a low-skilled workforce did not require much education. Too much learning, in fact, could stimulate out-migration to better jobs and schools.

These anti-intellectual attitudes filtered down to the rest of the population. Southern States lagged far behind the rest of the nation in supporting public education. In the late 1940's, expenditures per pupil in the South were about half the nonsouthern average. A study conducted in the early 1950's demonstrated that of every 100 children who had entered the first grade in the South, scarcely more than 10 graduated from high school (Hoover and Ratchford, 1951; and Pierce, 1955).

Even today when school expenditures have increased dramatically, the South's legacy of neglect for public education persists. The South possesses a smaller percentage of high school graduates in its population and a markedly higher adult illiteracy rate than the rest of the nation. Prevailing low tax structures throughout the South and the persistence of anti-intellectual attitudes impede more rapid improvement of public education, especially in the Deep South (Schulman, 1991).

Inadequate public health services and a general lack of basic citizen knowledge of health and hygiene reflected the weak public education system. Health problems, especially in the Gulf Coast States where frost came late, if at all, abounded in an era when active public health departments in other parts of the country were eradicating nutritional and bacterial diseases. The hookworm, an intestinal parasite, infected and chronically debilitated a great many southerners, perhaps as many as 2 million. In the 1930's, a cooperative study by the Florida State Board of Health, the Rockefeller Foundation, and Vanderbilt University found the State's adolescents aged 15 to 18 the worst afflicted group (44.7 percent), and the Panhandle the most severely affected area with nearly half of its teenagers (49.2 percent) infested with hookworm (Eberson, 1980; and Link, 1988).

Standard Oil magnate, John D. Rockefeller found the situation so appalling in the early twentieth century that he established and funded the Rockefeller Sanitary Commission for the Eradication of Hookworm Disease. A condition for receiving such aid was the establishment in each southern State of local and State public health agencies. This legacy of the Rockefeller Commission was even greater than the slow eradication of hookworm. Again, as with economic development, the impetus for reform came from outside the South.

Generally, the interwar years were not good economic times for the South, particularly during the Great Depression. A report ordered by President Franklin D. Roosevelt in 1938 on economic conditions in the South identified the region as "the nation's Number One economic problem." Admittedly, Roosevelt's ulterior motive for commissioning the study was to prod southern voters to elect more supporters of New Deal legislation who would address the region's economic difficulties, but the statistics in the report relayed a sorry story of serious regional gaps in most indices of civilization.

The Roosevelt Administration believed that the economic problem was primarily a political problem. That was only partially true. White supremacy effectively limited the contributions of a sizable proportion of the South's population. Also, the region's folk culture, especially the rise of religious fundamentalism in the 1920's deflected attention away from some of the South's more glaring problems. Battles over evolution, prayer in the public schools, how to keep the Sabbath, and personal morality consumed considerable time and energy throughout the South. The resurgence of the Ku Klux Klan during the 1920's reflected more the moral war that was raging (with the Klan defending fundamentalist tenets) than racial conflict. The surge of the religious right also cast aspersions on inquiry, education, and reform. The religious right operated in a stark world of good and evil and the conviction that its adherents knew the difference. With the Bible as the unquestioned authority, further education, discussion, debate, and especially dissent were unnecessary, even dangerous (Bailey, 1964; Hill, 1980; and Thompson, 1982).

The advance of the religious right was not only about religion, but about control. As cities grew (and nowhere was urbanization more evident in the South than in Texas), threats to the status quo appeared greater. The Ku Klux Klan was, by and large, an urban phenomenon. It was in the city that modernism met southern traditions and the fit was not always accommodating. The rank hostility of southern States and cities toward labor unions reflected the importance of the established leadership maintaining control in the face of economic growth and labor migration. Even in areas that had been highly unionized, such as Tampa, which in the 1920's had the highest union membership per capita of any U.S. city, counterattacks from civic leaders eventually secured localities and States from much of the labor movement. By 1945, for example, the union movement was negligible in Tampa. A year earlier, Florida became the nation's first State to pass right-to-work legislation.

Local leaders fought unions because they threatened control over labor and the political structure; the leaders employed white supremacy, a friendly press, and law enforcement

personnel to keep out union activity. The South was, and is. the least unionized region of the nation, although the Gulf Coast region has maintained a relatively high (for the South) union membership owing to the character of its industry. Even in the gulf region, the transiency of the labor force, the abundance of unskilled labor, and the ever-present threat of using black strikebreakers dampened union enthusiasm before World War II . It was not coincidental that southern workers were the lowest-paid, least-protected, and most-vulnerable to layoffs of any regional workforce in the nation.[2]

There was one intrusion which the one-party South could not hold off and that was the Federal government. Even before the New Deal, the Federal government had made inroads into the South, often with the assistance of southern legislators supporting Democratic President (and native southerner) Woodrow Wilson's New Freedom programs, including child labor laws and the Federal income tax (the latter of which would never have passed were it not for southern Congressmen). The Wilson Administration (1913-1921) had no intention of upsetting the social or racial status quo. In fact, Washington, D.C. became a segregated city during Wilson's tenure in the White House. Southern lawmakers perceived no contradiction in supporting progressive legislation nationally and retaining a regressive social and racial system back home.

By the time of the Wilson Administration, the one-party political system in the South had placed southern lawmakers in leadership positions in the U.S. House of Representatives and the U.S. Senate. Despite the South's traditional animus toward Federal authority, southern Congressmen avidly sought Federal funding for economic development projects during the Wilson years. They were instrumental in passing the Federal Highways Act of 1916, which improved tourism, lowered costs of farmers, and relieved States and localities of some of the financial burden to get the South out of the mud. Earlier in the century, rural free delivery, another Federal program, also helped reduce the isolation of southern farmers. Federal subsidies made Tampa the beneficiary of the world's first regularly scheduled air-passenger service in 1914. When the U.S. entered World War I, the Federal government established a naval air station in Pensacola. After the devastating Galveston hurricane of 1900, Congressman Tom Hall of Houston convinced Congress to appropriate the then-huge sum of $1,000,000 for a ship channel from the Gulf to Houston. In 1909, Houston matched subsequent Federal funding for the project and the ship channel opened in 1914. The facility has remained a key component of the city's economic base (Kaplan, 1983). These measures were paltry in comparison with what the South would reap from Washington during the New Deal and World War II (Potter, 1972).

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2 For a full discussion of Southern leaders' hostility to organized labor, see James C. Cobb, *The Selling of the South: The Southern Crusade for Industrial Development, 1936-1980* (Baton Rouge, 1982).

2.3 The Federal Era: 1930 to 1965

Again, a Democratic president and a Democratic Congress, top-heavy with southerners in key positions (the Texas delegation alone included nine chairmen of permanent committees; three southerners served in succession as majority leader and then speaker during the Roosevelt years) pumped millions of dollars into the region providing infrastructure such as water and sewer systems and roads that cities and States in other parts of the country had to pay for by themselves in earlier decades. Programs such as the Works Progress Administration (WPA) and the Public Works Administration (PWA) not only built infrastructure, but sports stadiums, court houses, and other public buildings. The South received a relatively free upgrade that reinforced the power of local leaders because, under the Federal system, they were the individuals who dispensed the funds and the patronage.

2.3.1 Key Legislation Affecting the South

Few measures affected the South more than the Agricultural Adjustment Act (AAA). This New Deal legislation limited the cultivation of the region's staple crops, including cotton, rice, and tobacco, compensating farmers for land taken out of production, and establishing minimum prices for these commodities. The AAA enabled landowners to plan their budgets and their cultivation patterns more carefully, injected cash payments into a cash-poor economy, and threw tens of thousands of tenants and sharecroppers off the land as reduced acreage for staple crops rendered their labor redundant. Farm owners pocketed the cash and began to replace their workforce with machinery. Basic implements such as tractors were now affordable, and one tractor could accomplish the work of 25 people, and required much less maintenance.

The net effect of the AAA in the Gulf Coast region was to increase the migration from farm to town and city, and out of the region entirely. If farmers needed laborers for harvesting, they sent their trucks into the city and brought back workers. The arrangement suited landowners who no longer had to provide shelter, seed, and tools to sharecroppers, but the new agricultural patterns left the erstwhile tenants and sharecroppers with only seasonal work and below-subsistence income. With little education or occupational skills that could match urban work, these displaced farmers traveled the rough roads of the South during the 1930's.

It was not the Federal government's intention to generate even greater unemployment during a depression. The AAA legislation stated clearly that sharecroppers and tenants were to share land bank payments. The program was implemented by local officials and county extension agents with close ties to the landowning elite. Sharecroppers made sporadic attempts to unionize during the 1930's, but, for the most part their efforts met with little success. The

complicity of local authorities ratified the landowners' interpretation of Federal agricultural policy.[3]

2.3.2 Commercial and Recreational Fishing

In a less-publicized initiative, the WPA assisted the Gulf Coast commercial fishing industry. Commercial fishing rewarded its participants with hard work and, at best, modest incomes. Commercial fishing was a mainstay along the Mississippi Gulf Coast, but as late as 1964, a Federal study noted that there were "large numbers of unexploited species of fish and shellfish" in the gulf (U.S. DOI, 1964). During the 1930's, the WPA worked out a cooperative program of restocking and renewing the geographically limited commercial fishing industry, particularly along the Florida Gulf Coast. The main profits derived from oyster beds located along the upper Florida coast from Cedar Key in Levy County to Panama City in Bay County. By the 1940's, when major fishery discoveries occurred along the gulf, the shrimp industry had become an additional means of significant profits along the Florida and Texas Gulf Coasts (Gannon, 1996).

Commercial fishing had played a role in Gulf Coast urban economies since the nineteenth century. Fish-processing plants emerged along the Texas and Alabama Gulf Coasts by the turn of the twentieth century. Commercial shrimping in the gulf emerged only during the early 1940's, when Cajun shrimpers introduced their craft to Texas gulf waters. Texas shrimpers still remember the time when "the Frenchmen came" with their big boats and sophisticated equipment inaugurating a prosperous era for the business that lasted through the early 1970's (Maril, 1983).

Compared with the Atlantic fisheries, then, the Gulf Coast commercial fishing industry is a relatively recent phenomenon. Problems, including competition from sports fishermen, depleted resources, periodic outbreaks of red tide (a microscopic, planktonic organism) which exudes a toxic substance that kills, and human-generated pollution threaten the industry. In this last aspect, the harvest of shrimp depends on a continual supply of fresh water to the bays and an intact salt water marsh system (particularly in Texas and Louisiana). Therefore, both pollution and changes in the estuarine environment such as dredging and filling can adversely affect the production of shrimp. In the gulf, industrial pollution is a particular problem because the shallow bays in the region, with their limited tidal range, have a very low flushing rate (Cobb, 1970).

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[3] For a discussion on the impact of the AAA on the South, see, Gilbert C. Fite, *Cotton Fields No More: Southern Agriculture, 1865-1980* (Lexington, Ky., 1984), pp. 120-62. See also, Pete Daniel, *Breaking the Land: The Transformation of Cotton, Tobacco, and Rice Cultures Since 1880* (Urbana, Ill., 1985), pp. 73-108.

However, the most significant threat to commercial gulf shrimping and fishing has been the growth of the recreational industry, especially sport fishing and second-home development along the Texas, Mississippi, Alabama, and Florida Gulf Coasts. The rapid development of the oil economy, most notably in Texas after World War II, provided more disposable income for urban Texans, as well as local and State governments with money to improve roads and access to coastal areas. The increase in leisure time and the coast's natural attractiveness enticed vacationers and part-time residents along the Gulf Coast from the 1960's onward.

These newcomers would have significant social and policy implications for the gulf fishing industry and, ultimately, for the general economy of the region. First, the influx of weekenders and part-time residents placed a significant service burden on coastal communities which were only partly offset by increased tax revenues. Second, rising property values priced some long-time residents out of affordable housing; this was especially so among Texas shrimpers who faced shrinking incomes from their commercial operations after 1970, and rising land prices. Third, the growing numbers of sport fishers along the Gulf Coast collaborated with environmentalists and oil interests to restrict commercial fishing and shrimping in the gulf. These efforts succeeded in the late 1980's with Federal regulations that required shrimpers to use turtle excluder devices (TEDs) to protect sea turtles. Florida, with the gulf's largest recreational industry, has imposed stricter TEDs regulations. In 1990, the Federal government extended TEDs to include red snapper and other finfish caught and killed in shrimp trawls.

In Mississippi, commercial fishers have battled gambling casinos since the early 1990's. The casinos have pushed shrimpers' boats, docks, and ice houses off the Biloxi waterfront and confined them to the town's back bays where they are separated from the gulf by a drawbridge open only for two 1-hour periods in the morning and late evening. Eventually, commercial fishers believe, all marine species targeted by sport fishing interests will be restricted or banned to those who fish for a living.

The plight of the gulf shrimpers and fishers reflects the growing political and economic power of recreationists in all the gulf States, save Louisiana where the topography of the coast limits development. The strength of the recreational lobby will hold significant import for future offshore oil drilling activities.[4]

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[4] For a discussion of the decline of the gulf fishing industry and the growing power of resort- and recreation-oriented interests, see Anthony V. Margavio and Craig J. Forsyth, *Caught in the Net: The Conflict between Shrimpers and Conservationists* (College Station: Texas A&M University Press, 1996); see also, Maril, *Texas Shrimpers*, pp. 128-30; Maril, *Cannibals and Condos*, pp. 58-60.

2.3.3 The Depression and the New Deal

Gulf residents could scarcely imagine these turns of events during the depths of the Depression. The national economic crisis revealed the basic weakness of the South's economy. Despite notable gains in urbanization and industrialization during the 1920's, regional wages by the early 1930's were 30 percent or more below the national average, and the per capita income was 53 percent of the national figure. Manufacturing continued to be concentrated in industries that could make effective use of the South's relatively cheap labor. Moreover, the South's chronic inattention to social services became glaringly evident early in the Depression when the meager public welfare systems of the urban South collapsed quickly under the weight of unemployment, with some cities, such as Birmingham and Mobile, contemplating the sale of city parks to make up budget deficits. The region's weak educational system also suffered during the 1930's, as school terms shortened, teachers went without salaries for months at a time, and children stayed home from school either helping their struggling families or without clothes or shoes to attend classes[5]

In the short-term, the New Deal bolstered the one-party political system in the South and its leadership. Bailing out distressed communities and families, providing patronage opportunities for local leaders, and building a wide array of public projects, the New Deal proved immensely popular with a broad cross-section of the southern population. Increasingly, however, some State and local leaders became disenchanted with and wary of the growth in Federal power, the dependence on Federal funds, and the growing diversity in New Deal personnel. Federal payments relieved white and black workers from their almost total dependence on white landlords and managers. Labor legislation came between management and workers by legitimizing unions as bona fide participants in the workplace. New Deal legislation marked the beginning of an integrated national labor market, in which wage and salary differentials reflected only cost of living and locational amenities. The imposition of national wage and labor standards beginning in the 1930's was a decisive step in abolishing the separate southern economy. The South's integration into the national economy, however tentative, troubled political and business leaders who had nurtured the relative isolation of the region, and the control and power that isolation implied.

2.3.4 World War II

The intuition of these leaders that their world was changing proved correct, but less due to the New Deal than to the war that followed and changed the South for all time. One historian has written that when a full assessment is made, World War II may turn out to be a more

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5 For a discussion of the impact of the Great Depression on southern cities, see David R. Goldfield, *Cotton Fields and Skyscrapers: Southern City and Region, 1607-1980* (Baton Rouge, 1982), pp.166-67; 180-82 and Roger Biles, "The Urban South in the Great Depression," *Journal of Southern History*, 56 (February 1990), pp. 71-100.

formative event in southern history than the Civil War (Sosna, 1987). The billions of dollars fed into a starving southern economy, the vast array of military bases and defense plants scattered over the southern landscape, the infrastructure and technical expertise that accompanied these installations, and the migration of more than 5 million black and white southerners to cities in the South, to other parts of the country, and overseas lend considerable weight to that interpretation. More than 60 of the army's 100 new camps were located in the South, and two-fifths of the wartime expenditures for new military and naval installations went to the South. An older base, Fort Benning, Ga., became the army's largest basic training center. By 1945, the productive capacity of the southern economy, stimulated by Federal investments in new plants and equipment had increased by 50 percent; the number of production workers doubled during the war; the South's farm population declined by 20 percent between 1940 and 1945; and southern cities gained 30 percent in population, surpassing the rate of urbanization nationally.

The South, and especially the Gulf Coast region, benefited from the wartime bonanza for four reasons. First, Washington made a genuine effort to improve the southern economy that the Roosevelt Administration had singled out in its 1938 report. Second, the seniority system in Congress and the large Democratic majority gave southern lawmakers considerable clout in the disbursement of Federal funds. Third, defense department strategists deliberately dispersed bases and defense plants to reduce the likelihood that a concentrated enemy air raid could damage or destroy a major part of the nation's military capability. Finally, the relatively mild climate of the South allowed all-season training and, particularly in the Gulf Coast States and the Southwest, the high number of clear days proved attractive for the location of air stations.

Few regions of the South benefited more from World War II than the Gulf Coast. The shipbuilding facilities in Pascagoula, Miss., for example, vaulted that town's population from 4,000 in 1940 to 30,000 in 1944. The Mobile area, also primarily as a result of naval production, went from 115,000 people in 1940 to 200,000 in 1944. Petroleum and chemical industries grew enormously in Texas, the southern State that experienced the largest economic gain from wartime spending (Goldfield, 1987).

A brief litany of defense-related activities along the Texas Gulf Coast provides some indication of the significant injection of Federal wealth into the area. Shipyards hired workers in the Orange-Beaumont-Port Arthur district, and at Galveston, Houston, and Corpus Christi. The necessity for refineries to fuel the war machine and the development of synthetic rubber turned that Gulf Coast strip into the largest petrochemical industrial area in the world. Munitions plants were built throughout the State. Steel mills opened operation in Daingerfield and Houston. The world's largest tin smelter plant was located at Texas City. Value added by manufacturing in Texas stood at $453 million in 1939; by 1944 that figure had jumped to $1.9 billion (Calvert and De Leon, 1990).

The impact of the war on the urbanizing gulf region of Texas was most spectacular in Houston. The story of one company, the construction firm of George and Herman Brown, reflects both the wartime boom and the importance of good political connections. An early supporter of then New Deal Congressman Lyndon Baines Johnson, George Brown utilized this contact to win a large contract in June 1940 to construct the Corpus Christi Naval Station. Once the U.S. entered the war, the station required expansion which quadrupled the value of the contract to the firm. With this major success, the company soon won a series of contracts to build destroyer escorts and landing crafts at a newly formed subsidiary, Brown Shipbuilding Company near Houston. This company employed 25,000 workers, built 354 combat ships, and acquired total government contracts worth about $1 billion. Brown remained a major supporter of Senator Johnson through the postwar years and his company won the construction contract in 1961 when Johnson was Vice President and Houston was chosen as the site for the National Aeronautics and Space Administration's (NASA) Manned Spacecraft Center (Boles, 1995).

The Texas Gulf Coast also benefited from the fact that petroleum became the State's leading export and accounted for 80 percent of the products that went through Texas ports during the 1940's. Houston became the nation's second largest port.

At the opposite end of the gulf, the results of the war were equally impressive. The war poured huge sums into Florida's underdeveloped, narrowly based economy. In 1933 Floridians earned $424 million in income; by 1943 they earned $2 billion. The war rejuvenated Florida's sagging shipbuilding industry, and Pensacola, Panama City, and Tampa shared in the bonanza. Panama City in Bay County especially benefited from the wartime activity. In 1940 Bay County languished in poverty trying to support 20,000 residents in a relatively isolated location along Florida's Big Bend. The county's population more than doubled by 1945. The Wainwright Company there constructed 108 vessels during the war. At its peak, the shipyard employed 15,000 workers, earning unheard-of wages (Green, 1982; McGovern, 1976; Wynn, 1993; and Rogers, 1960).

Even better-situated Tampa received a substantial boost from wartime expenditures. The Depression had shattered that city's cigar industry. The construction of MacDill Air Field in 1939 and the reconstruction of the shipbuilding industry spelled a new prosperity. The Tampa Shipbuilding Company employed 9,000 workers by the end of 1942 and desperately advertised for more laborers, a problem exacerbated with the establishment of a second major shipbuilder in Tampa at Hooker's Point. These wartime projects provided a solid foundation for the city's postwar economy. The Federal government assisted in the expansion of MacDill Field after the war and the use of Drew Field as an international airport. The shipyards on Hooker's Point went to private industry to supply the burgeoning maritime economy. In 1956, the State and Federal governments appropriated nearly $10 million to begin construction of the University of South Florida campus on the site of the abandoned Henderson Field.

At the western end of the Florida Panhandle, Pensacola also experienced a substantial upsurge in prosperity. The Pensacola Shipyard and Engineering Company employed 7,000 workers by early 1942. The Federal government spent $55 million expanding and constructing the Pensacola Naval Air Station and auxiliary fields (Rogers, 1996).

New Orleans also experienced a revival during the war. Andrew Jackson Higgins transformed his small boat-building firm into a giant, modern producer of Liberty ships. In 1942 he won a huge contract to build over a thousand cargo planes in a gigantic factory that he built in Michoud, just east of the city. As was the case in Tampa and Houston, the benefits of the war lingered into the postwar era. Two decades later NASA chose the Michoud Plant as the assembly site for the Apollo rockets (Tindall, 1967).

The wartime mobilization along the gulf required a huge shift in population to support the burgeoning industries. The migration entailed in such enterprises revealed a great deal about the social and economic condition of the Gulf Coast in particular, and of the South in general, as local governments proved incapable of absorbing the sudden rush of population. During the war the massive Ingalls shipyard facility at Pascagoula, Miss., employed three times as many people as had resided in the town prior to the war. They lived in makeshift trailer parks in this heretofore quiet fishing and farming community on the Gulf Coast. Most of the newcomers arrived from the Mississippi countryside and were unfamiliar with urban densities and lifestyles that soon characterized the town.

Overworked medical and social service personnel provided assistance when possible, but it was sporadic at best. The collapse of urban services plagued not only small towns suddenly grown large, but cities as well, especially coastal cities thrust into the war-making juggernaut. Mobile was the fastest-growing city in the country during the period 1940-1943. The population boom shattered Mobile's fragile urban services. Agnes Meyer of the *Washington Post* entitled a book based on her 1943 tour of the urban Gulf Coast, *Journey Through Chaos*. Mobile, a city known mainly for its oysters and Mardi Gras now boasted two major shipyards in addition to an Alcoa plant. Rooming house boarders slept in shifts and any multiple-unit structure became a tightly packed dormitory. The 19-member police force was inadequate to challenge the street gangs, vandalism, and looting that accompanied the frontier conditions. Refuse collection and the water supply disappeared at too-frequent intervals. By 1944, the Federal government stepped in and assumed the task of providing housing and services to a stressed population.

Other Gulf Coast locations either lacked Mobile's explosive growth or its importance to the defense industry and had to fall back on their own resources. Residents of Panama City, Florida, a community which could not adequately care for its own citizens during the 1930's, were fortunate enough to have a public-spirited entrepreneur, J.A. Jones, the general contractor at the shipyards. Jones assumed the role of urban planner and political boss, building homes for workers and delivering milk and ice to families (Gannon, 1996).

Between 1940 and 1945, 1.6 million southern civilians left the region, while another 4.8 million migrated within the South. The unskilled and unpropertied of both races constituted the vast majority of the intra-regional migrants. With so much moving about and crowding together in towns and cities, that racial tensions erupted into violent conflict, especially along the Gulf Coast. The timber regions had been especially fertile territory for racial animosity and lynching during the late nineteeth and early twentieth centuries. The latest economic boom in the area produced similar unrest.

Although segregation and job discrimination persisted throughout the war in the South, blacks used the opportunity of the fight against fascism abroad to win concessions at home. They pushed, mostly unsuccessfully, for equal employment opportunities, access to educational facilities, and the right to vote. For some whites, such demands were personal affronts. Whites and blacks literally rubbed elbows on crowded city trolleys and streets; they appeared at the same workplace, even if at different work stations; and they sought amusement at some of the same locales established to handle a wartime population with much cash and few roots.

World War II proved to be an enormous economic boon to the Gulf Coast. However, economic development did not lead to social and racial reform. To the contrary, the fear of social and racial change strengthened the resolve of southern whites to maintain white supremacy and segregation. The forces unleashed by the war would eventually doom both the old-style leadership and the system of racial separation that supported it.

If the war generated unprecedented migration, the postwar era soon broke that precedent. During the 1950's, 5.5 million farm people left the land and almost 1.5 million whites and nearly 2 million blacks migrated out of the South. The people departing the farms bound for Houston, Nashville, Chicago, or Newark, tended to be young; 75 percent of farm youngsters reaching maturity left agriculture during the 1940's, and the trend continued. Typically, migrants were relatively more skilled and better educated than the peers they left behind, and they were more apt to be male than female, a fact that negatively affected family development in the new surroundings.

The growth of black urban populations provided both an expanding critical mass for black institutions, especially the church, and greater pressure to loosen the strictures of disfranchisement and racial segregation. Returning veterans of both races had seen other parts of the country and the world, and they expected more of their communities as a result. These young men and women were less content now with the status quo.

A new group of white leaders emerged in the postwar South to challenge the old politics based upon racial and social inequities. They were not racial egalitarians by any means, but they shared a sense of fairness and believed that the white South would never move forward without southern blacks also advancing. Such was the philosophy of Alabama's James E. ("Big Jim") Folsom. Elected governor in 1946, Folsom promoted an ambitious program including reapportionment, the appointment of registrars amenable to enrolling blacks, the

removal of a State constitutional prohibition against women serving on juries, and an array of educational and social service reforms. Alabama senators Lister Hill and John Sparkman shared his views, though they were not as outspoken, especially on racial matters (Goldfield, 1990).

2.3.5 Social and Political Changes

The emergence of new leaders implied the gradual erosion of power exercised by rural county elites since the end of Reconstruction. The fiscal conservatism and white supremacist views of the old leadership were less evident among the new generation of leaders. Federal expenditures during World War II helped modernize the region, boosted consumer income, and opened the South to the outside world.

During World War II, roughly 80 percent of Americans in the armed forces spent some time in the South. For many of these young men it was their first exposure to the South. Prior to the war, few northerners ventured into the region voluntarily save a handful of wealthy vacationers to Florida and the mountains of Virginia and North Carolina. Letters home indicated that northern recruits found ample confirmation of the South's legendary hospitality, but many were unprepared for the brutality of the climate, the poverty of the land, and the rigidity of racial customs. Black soldiers from the North had heard from relatives about segregation and discrimination, and the North was hardly a racial promised land. Some white southerners greeted blacks in uniform, especially northern blacks, with suspicion, hostility, or violence. Some northern whites who trained at southern bases were also repulsed by the degree of racial hostility they encountered. Neil Simon's prize-winning Broadway play, "Biloxi Blues" includes some of these reminiscences, focusing on northern soldiers training at a base on the Mississippi Gulf Coast (Daniel, 1990).

The trend toward breaking the dominance of social and racial conservatives came to a temporary halt in the early 1950's. Federal civil rights initiatives during the Truman administration precipitated a resurgence of political reaction in the South that accelerated after the 1954 U.S. Supreme Court decision in *Brown v. Board of Education of Topeka, Kansas*. The reaction was especially notable in State legislatures. Hard segregationists followed Folsom in Alabama, and Mississippi and Louisiana voters turned away from the halting steps they had taken toward racial moderation. So powerful was the grip of racial reaction that the closing of public school systems and the subsequent loss of education were tolerated by the white majority in those States.

After the war, northerners carried these conflicted memories of the South with them. When southern whites greeted civil rights initiatives with intransigence during the late 1940's and 1950's, northern whites remembered their own experiences in the South. They formed an important contingent of public opinion that eventually pressured Congress to write civil rights legislation in 1957 and 1960, and particularly the two major landmarks of the civil rights era, the 1964 Civil Rights Act and the 1965 Voting Rights Act.

The economic fall-out from opposition to Federal and local civil rights initiatives during the late 1950's and early 1960's proved instructive, especially for State economic development offices and urban mayors, though the extent of investment flight has been exaggerated. New Orleans, which had enjoyed the progressive postwar leadership of the Morrison administration, had its image as a great party town tarnished by the conflict over school desegregation in the late 1950's. The activities of Leander Perez in neighboring Plaquemines Parish and the resistance of the State government further damaged the Crescent City's national image. Already faltering as a shipping center, plagued by massive white flight and growing crime and poverty, New Orleans struggled during the 1960's.

2.3.6 The Offshore Oil and Gas Industry

Fortunately for New Orleans and southern Louisiana, the oil boom overcame the social and public relations disaster of the civil rights era. Victor Schiro, the city's mayor during this period (1961 to 1970), noted with unintended humor that "We in New Orleans are sitting on some of the greatest assets in the world" (quoted in Bernard and Rice, 1983). During the 1920's and 1930's, initial exploration and development occurred in Louisiana's deltaic plain. Introduction of the submersible drilling barge in 1933 expanded oil extraction and the practice of cutting canals across the marsh or shallow estuaries as a means of getting to the drilling site. An extensive network of canals from inland water oil development and loss of wetlands resulted from this practice. At the time, the industry was largely unregulated and environmental consequences were not considered.

Expanded oil extractions made possible by technological advancements led to the emergence of a marine construction and supply industry for the offshore oil industry in coastal Louisiana. The Louisiana State Mineral Board was created in 1936 to lease waters adjacent to the State. It was also during the late 1930's that the first attempt at production from the GOM (Creole Field 1-mile off of Louisiana) and the first platform in the open gulf was used. The movement offshore led to the use of offshore living quarters and concentrated work schedules. The cost of equipment led to a 24-hour per day operation as a means to accelerate return investment (Gramling, 1995). From the time that the Kerr-McGee Corporation brought in the first offshore oil well on the OCS in 1947 to the mid-1970's, oil companies had sunk over 14,000 wells off the Louisiana coast. In 1981, a consortium of oil companies opened the Louisiana Offshore Oil Port (LOOP) to capture the imports brought in by giant supertankers, and new land-based discoveries produced extensive drilling along the Tuscaloosa Trend in southern Louisiana (Bernard and Rice, 1983).

The oil industry triggered intensive development throughout southern Louisiana. An industrial corridor, with New Orleans as its focal point, emerged from Baton Rouge to the Gulf of Mexico. Here again, the impact of Federal funding for wartime production is evident. During the war, aluminum and synthetic rubber companies located there. Then the ·etrochemical industry took over, though not without an assist from the Federal government ·isiana's leaders were much less critical of Federal involvement in economic development

initiatives.) In 1956, the Army Corps of Engineers acting on a directive from Congress, built the Mississippi River-Gulf Outlet (MRGO) which cut 40 miles off the trip from New Orleans to the gulf and expanded the capacity of that city's port. This, in turn, attracted additional industry to the region, especially to the upriver parishes of St. Charles, St. James, and St. John the Baptist (now known collectively with Orleans, Jefferson, St. Bernard, and Plaquemines parishes as the River Region). Local boosters dubbed the lower Mississippi Valley, "The American Ruhr." By 1980, one out of every four jobs in the seven-parish area was related to oil (Bernard and Rice, 1983).

In Texas, there was smattering of activity during the 1930's as one company carried out seismic exploration of Galveston Bay, in which Texas awarded leases the following year, with no apparent exploration. In 1941, British Petroleum completed the first offshore well of the decade, near Sabine Pass, but the results were too small to warrant further activity (*Petroleum Engineer,* July 1, 1936; *Oil and Gas Journal,* March 26, 1936; Wrather, 1945). Developments during World War II facilitated offshore activity as oceanographic and meteorological studies provided data about the ocean floor and operating environments. Wartime shipyards in Beaumont, Orange, and Houston took on oil rig construction and developed successively more efficient equipment (*Petroleum Engineer,* April 1939; *Drilling, February 1952).*

After the war, offshore geophysical exploration permits were issued, with significant activity during 1948 and 1949. Experimental drilling occurred in Corpus Christi Bay during the late 1940's and early 1950's. From 1922 through 1947, Texas issued leases on 82 offshore tracts on 54,000 acres, but in 1947, there were only three small wells producing on State leases (*Austin Statesman,* October 18, 1947; *Austin American,* August 29, 1947; and *Dallas Morning News,* June 25, 1949).

In the 1950's, there was still only scattered activity offshore Texas, largely because of successful developments offshore Louisiana, the continued addition to reserves from onshore activity, and cost-price squeezes. During the 1950's and 1960's, most drilling was offshore Galveston and Corpus Christi. By 1964, no oil was being produced beyond the 3 marine-league limit. Nearer shore, Shell's success in the Buccaneer and Den fields, off Galveston triggered additional interest by confirming geological speculation about the presence of hydrocarbons in commercial quantities (*Oil and Gas Journal,* May 29, 1960).

Oil activities offshore of Texas continued to be slow during the 1960's, though Shell carried out broad-pattern seismic exploration along the whole continental shelf, producing data that led to increased activity. By 1966, major companies began to drill some leases, which would expire during the following year. By June of that year, there were nine rigs running (*Oil and Gas Journal,* June 7, 1965 and August 22, 1966).

2.3.7 Promoting Economic Development in Mississippi and Alabama

Oil could not save the sputtering economies of the Mississippi and Alabama Gulf Coasts. These areas fell behind the rest of the South during the 1960's. Mississippi entered the postwar era with considerable hope that their traditional position as the poorest State in the Union would dissipate amid a flurry of economic activity. During the early 1940's as the South climbed out of the Depression into wartime prosperity, the words most often heard in chamber-of-commerce board rooms, corporate lunch rooms, and university classrooms throughout the region were "growth" and "balance." Growth -- how to achieve it; and balance -- how to develop an industrial sector to complement the changing farm economy.

During the 1930's, the State of Mississippi under Governor Hugh White had proposed Balance Agriculture with Industry (BAWI), a program which authorized local governments to acquire land and buildings for new industry and to issue industrial development bonds for that purpose. Mississippi, and most southern States, had the advantage of cheap labor and low taxes, and were accustomed to touting their business-friendly labor and environmental policies. The major deterrent to industrial migration from an area of greater to lesser operating expenses was the cost of moving and acquiring the needed buildings and facilities. By providing a tailor-made structure to house an industry, a Mississippi community could make an industrial move relatively painless. Toss in tax exemptions of up to 20 years, an abundant low-wage, non-union labor force, and free infrastructure, and the enticements would be too difficult to pass.

Postwar Mississippi became a favored destination of relocating plants. A survey conducted in the 1950's indicated that many of the plants drawn to the State since the war would have probably come without BAWI subsidies. Moreover, the industries attracted to the State tended, overwhelmingly, to be low-wage concerns. By 1961, apparel, textile, food, and lumber and wood products firms accounted for 52 percent of all BAWI operations. The BAWI plan did little to elevate local pay scales, but a labor-surplus, capital-deficient State like Mississippi had little attraction for plants other than those that would employ large numbers of unskilled workers. The danger, of course, was that these footloose industries would pack up and leave once the subsidy clock expired and cheaper labor appeared elsewhere, particularly overseas. Which they did (Cobb, 1982).

Other southern States quickly followed Mississippi's lead. The booster ethic, evident in the post-Civil War giveaways of land to railroad and timber companies, persisted in the aftermath of World War II. In much the same way as the former Confederacy modeled segregation and disfranchisement laws after Mississippi's pioneering efforts in 1890, so now they jumped on the subsidy bandwagon. In 1950, the Alabama Planning and Industrial Development Board assured corporations that new industries "never pay any property taxes" and that a factory could "make a profit on its taxes" (quoted in Bartley, 1995).

As local and State leaders confirmed or expanded such practices as granting tax exemptions, facilitating loans, or donating free sites, they remained staunch defenders of conservative government, free enterprise, and in Mississippi, at least, segregation. The types of companies attracted by subsidy programs were indifferent to local racial customs, so the negative publicity generated by violent resistance in Mississippi and Alabama did not constrain those firms from establishing operations in these States.

2.3.8 Post War Federal Involvement

The emergence of the so-called "Sunbelt" economy after 1965 soon obliterated the memory of the civil rights struggle for potential investors and migrants. Civic leaders, especially in Louisiana, Mississippi, and Alabama held on to segregation and white supremacy as long as possible and then quickly discarded it when it became legally and economically untenable. The rapid acceptance of the 1964 Civil Rights Act in the South, which outlawed racial segregation in public facilities, surprised observers. The truth was that white leaders gave up very little; the fact that blacks could now go to restaurants, movie theaters, hotels, and parks previously closed to them, meant very little change in the daily lives of most white southerners. In other words, just as civic and State leaders could accept and encourage economic development without fear of changing basic social and racial patterns, so they could accept modification in the racial status quo without giving up either their power or wealth.

The postwar economic boom in the South owed a great deal to generous Federal funding. Despite the fact that the Federal government and southern States were often at loggerheads during the civil rights era, southern leaders benefited considerably from continued Federal largesse. These leaders continued the southern tradition of accepting, even welcoming Federal involvement provided the intrusion did not upset the social or political status quo. When President Johnson's War on Poverty threatened to broaden the power base in some southern cities, civic leaders backed off. Although the South contained 44 percent of the nation's poverty, it received 20 percent of poverty program expenditures (Watters and Cleghorn, 1967). Generally, southern communities and States did not compete vigorously for Federal dollars designated for reform more than development.

Federal funds to enhance local economies, on the other hand, found eager takers in the South. Texas and Louisiana gained financially when President Eisenhower signed the Submerged Lands Act of 1953 which returned to the States the mineral rights to the tidelands. This Act resolved the issue of ownership of subsurface lands which had arisen in the 1930's when Louisiana, Texas, Florida, and California assumed they owned the sea bottoms and the Federal government asserted Federal ownership. President Truman issued Executive Order 9633 in 1945 asserting Federal ownership of the continental shelf. A suit against California was initiated by the Truman Administration in the U.S. Supreme Court on ownership of minerals in the waters off the coast. Between 1947 and 1950, the U.S. Supreme Court issued a series of decisions known as the Tidelands Cases which established the legal rights of the Federal government over all U.S. offshore lands. As a result of the Submerged Lands Act of 1953, by

the mid-1950's Texas and Louisiana derived from minerals more than one-third of the total revenue they collected.

A second piece of legislation also passed in 1953, the Outer Continental Shelf Lands Act of 1953 (OCSLA), authorized the Secretary of the Interior to lease, through competitive bidding, the Outer Continental Shelf, that is the lands beyond State jurisdiction. The U.S. established the boundaries between State and Federal jurisdiction in 1954. For Texas and the western coast of Florida, the boundary is the 3 marine-league line; for Louisiana, Alabama, and Mississippi, and the eastern coast of Florida, it is the 3-geographical (statute)-mile line. The Outer Continental Shelf Lands Act of 1953 and its amendments in 1978 are the major legislation guiding Federal policy on OCS leasing. The first OCS lease sale was held in the gulf off of Louisiana on October 13, 1954. There were almost 200 structures in place in Federal waters by the time the first lease sale was held. Court suits by Louisiana and Texas to block implementation of OCSLA delayed lease sales in 1956, 1957, and 1958. A lease sale off of Florida was held in 1959. Louisiana continued to fight against OCSLA until the mid 1960's. Except for these early delays, lease sales in the gulf have been held at least annually and sometimes more frequently. Soon after lease sales started, the Coast Guard, in 1956, promulgated safety regulations for offshore structures.

In other Federal funding activities, NASA opened a test facility in Bay St. Louis, Miss. at the height of that State's massive resistance to integration campaign in October 1961. The unemployment rate in Hancock County, an area of chronic unemployment and underemployment dropped from 15 percent in 1960 to 2 percent in 1966. In that same period, employment in Hancock County shifted from predominantly agricultural employment to predominantly service and manufacturing employment (Holman, 1974).

NASA, or "NA$A" as its champions in the gulf States like to write it, played a major role in supporting scientific research in universities across the South. In 1962, during the most contentious period of civil rights demonstrations, NASA placed 57 of its 130 grants and research contracts in the southern States. The public universities of Alabama and Florida stood among the top recipients.

Texas received the greatest gift from NASA. In September 1961, NASA announced its decision to construct the Manned Spacecraft Center (now the Johnson Space Center), a $60 million installation on land donated by Rice University for that purpose. NASA policy dictated a dispersal of facilities away from the East and West Coasts, and the necessity of water transport probably ensured a gulf site. A year after the decision, before construction of the Center had been completed, 29 space-related companies had opened up shop in the Houston area. By 1965, Houston ranked first in the South in population, manufacturing payroll, value added, and as an industrial and consumer market. It began a dozen-year spurt of growth in science and market-oriented industries that promised to end its dependence on natural resources (Schulman, 1991).

NASA's Project Apollo spread its operations along the gulf crescent. In 1985, most of the space agency's nine facilities were in the South, including the Marshall and Johnson Centers, the Kennedy Space Center at Cape Canaveral, the Michoud Assembly facility in New Orleans, and the Mississippi Test facility at Bay St. Louis.

The burgeoning interstate highway system enabled the gulf States to take advantage of the economic boom during the 1960's and 1970's. When Congress passed the Federal Aid Highway Act in 1956, one southerner predicted that the measure "promises to have the most enduring effect on the South of any single piece of national legislation in United States history" (quoted in Schulman, 1991). There was something to the hyperbole. For decades, the South had fought discriminatory railroad freight rates. Not until the mid-1960's would equity appear in that battle. By that time, the truck had eclipsed the railroad as a key purveyor of goods. Interstate highways opened up many parts of the South to manufacturing. The new accessibility of rural areas to manufacturers had profound consequences for the South, especially in places like Hancock County, Mississippi or Brevard County, Florida where a budding highway network attracted NASA facilities. For rural areas outside the interstate network, however, decline and decay set in rapidly. The interstate also provided mixed blessings for other towns as the roads proved to be great development magnets that weakened downtown businesses.

For cities on the main line, the interstate became as important as a good airport. Interstate 75 connected Tampa with the Midsouth and the Midwest. Interstate 10 pushed across the northern tier of Florida from Jacksonville to Tallahassee and Pensacola and beyond to New Orleans. Truck traffic on the interstates further undermined the declining railroads, the technology that originally made Florida accessible.

The interstate system reinforced the trend from farm to city, and, here again, Federal policy helped the move from a rural to an urban South. Federal crop allotment cuts in the 1950's had severe implications for the rice culture in southwestern Louisiana. Farm owners consolidated their allotments and expelled tenants. These rice tenant families joined the exodus from the land in a movement that continued in the cotton area (Daniel, 1985).

2.3.9 Other Post War Changes

Agribusiness came to characterize Gulf Coast agriculture increasingly in the postwar years. Farming and remaining competitive required huge investments in capital that thwarted even the most efficient family farms. It was a national agricultural story, of course, but even in the traditional cotton-growing regions of Texas, the perfection of the mechanical cotton picker required new strains of cotton plants on which bolls grew higher up on the stalk and opened more evenly, and upon chemical defoliants that caused the leaves to fall off so they would not contaminate the lint sucked into the trailers. Modern pesticides, huge tractors, and high-tech cotton farming prospered on the giant agribusiness farms of the Texas plains and further west

in the 1960's, not on the tired soil of the older East Texas regions. By 1970 corporate farms were more prevalent in the South than in any other American region (Kirby, 1987).

One feature of postwar technology had an even greater impact on the Gulf Coast: air conditioning. It was difficult to imagine the extent of economic development, the growth of tourism, and the migration from other parts of the country to the gulf without air conditioning. The Gulf Coast climate is hot and cloying in the summer, especially away from the water. The first air-conditioned skyscraper actually predated World War II. The Milam Building in San Antonio received the Carrier air cooling system in 1928. Not until the development of reliable compressors after the war and the growing demand for residential use did air conditioning come into its own in the South.

2.4 The "Sunbelt" Years: 1965 to the Present

In 1976 the *New York Times* published a series of articles touting a new economic phenomenon, the "Sunbelt," a region stretching from Virginia to southern California, and including most of the South, particularly the Gulf Coast (*New York Times*, February 8 - February 13, 1976). The South's economic performance over the subsequent two decades did little to dispel the impression of promise and prosperity. The South, or southern States and cities, consistently led the nation in most indices of growth, including population, migration, value added by manufacturing, and service sector employment increases.

Tampa and Houston, the gulf's urban book-ends, fared particularly well during most of this two-decade period. Largely as a result of the oil boom in the 1970's, Houston climbed from 76th to 16th place in national per capita income ranking. From 1975 to 1980, Houston led the nation in housing starts. Population flowed into the city along with petrodollars. Houston grew from 600,000 residents in 1950 to 1.6 million in 1980. Tampa emerged from the post-civil rights era as a model of economic diversity with shipping, citrus products, and tourism leading the way. Hillsborough County ranks among the 40 top agricultural counties in the nation, primarily as a result of the citrus and cattle industries. Meat packing, egg production, dairy products, and nursery/greenhouse stock are also important activities. Both cities boasted big-league sports teams which, for Tampa especially, was important for providing a common identity. In 1990 barely one in four residents of Tampa was born in Florida (Bernard and Rice, 1983).

2.4.1 Increasing Ethnic Diversity

A steady supply of cheap labor fueled the Sunbelt economy, particularly along the Gulf Coast. The Hispanic migration to Texas and Florida is well-known, but Hispanics have moved into Louisiana, Mississippi, and Alabama as well, some illegally. One scholar has estimated that at least one-third of the shrimpers along the Texas Gulf Coast are undocumented Mexicans. Asians have also arrived along the Gulf Coast (Maril, 1986). Ethnic diversity has historically characterized the shrimping community in Texas, and it has served as a source of persistent

conflict in many coastal communities (Maril, 1983). Even when Cajun shrimpers ventured into Texas in the early 1940's to transform an industry and provide work and capital for coastal communities, their presence was resented. More recently, Asians have arrived along the Gulf Coast. By the year 2000, blacks, Mexican-Americans, and Asians will comprise a majority of Texas' population.

These ethnic groups will likely change the racial dynamics of Gulf Coast cities, sometimes increasing tensions and sometimes isolating blacks. Some ethnic groups will also, by the dint of their enterprise change the economic profile of Gulf Coast areas. In the mid-1970's, for example, Vietnamese fishers and shrimpers began settling in Pensacola and Panama City where they applied their skills to revive those industries in the area (Gannon, 1996). But, when a group of Vietnamese fishers were resettled in Port Isabel along the Texas Gulf Coast, they were met with hostility and violence. The government relocated them in 1978 after two Vietnamese fishers in nearby Seadrift killed an Anglo shrimper in self-defense. Southern States have been slower than the urban Northeastern and Midwestern states in responding to the particular needs of different ethnic groups. Black and white traditionally has defined social relations in the Deep South. Ethnicity seems to be a new phenomenon that smaller communities in particular have difficulty addressing in schools, in the provision of social services, and in community life (Maril, 1983; Starr, 1981; *Mississippi Folklife*, 1995).

2.4.2 Tourism and Recreation

Tourism and the recreation industry also picked up along the Gulf Coast, especially as traditionally-booming areas of south Florida became overcrowded, polluted, and, in some cases, dangerous. The Florida Panhandle will never approach the density of South Florida: military bases and State parks ensure that much of the region will retain its pure white beaches and emerald green water. Development pressures are mounting along the Emerald Coast from Bay County in the east to Escambia County in the western Panhandle. Much of this interest has been generated by the successful venture of Seaside, developed by Birmingham's Robert Davis and designed by the Miami architectural firm of Duany/Plater-Zyberk. While urban and tourism experts admired the early-1980's plan for Seaside, they wondered if a high-density, upscale development with a heavy emphasis on culture and the arts as opposed to traditional resort amusements would work in an area known as the "Redneck Riviera," more an extension of lower Alabama than of Florida. The success of Seaside exceeded even Davis's dreams, and soon clones of the Victorian-style architecture, if not its esthetic and cultural qualities began appearing along nearby beaches. The Sandestin Resort in nearby Destin also followed a tasteful if more tourist-oriented design, and suddenly, the Emerald Coast boomed as a tourist and second-home center, although "boom" should be taken in the context of the dearth of development that existed prior to Seaside when Gulf Shores, Ala. claimed the status of the only upscale community between Panama City and New Orleans (Jackson, 1998).

Further west along the gulf, the Mississippi coast awoke, but with quite different development in the 1980's: riverboat gambling, particularly in Gulfport and Biloxi. Unlike Seaside,

however, gambling did not generate the type or extent of development that promoters had projected. Jefferson Davis's home, Beauvoir, sits as a graceful reminder to simpler days in Biloxi, within hailing distance of the casinos, but neither tourism nor lady luck have generated an economic boom in the area. Jackson, Harrison, and Hancock counties continue to fare better than the rest of Mississippi, which is more a reflection of the State's poverty than of the Gulf Coast's prosperity.

In Texas, South Padre Island has emerged as a national tourist destination and condominiums now crowd beachfronts and crowd out commercial fishing. The Texas Gulf Coast is rapidly becoming a recreational suburb of Houston and Dallas.

2.4.3 Offshore Oil and Gas Activities

On the offshore oil and gas front, the gulf continued to dominate the U.S. offshore oil and gas activity. Of the total OCS acreage leased between 1954 and 1995, about 83 percent were in the Gulf of Mexico OCS region. In 1995, 3,823 of the 3,891 of the OCS oil and gas production facilities in the United States were located in the gulf and about 14 percent of total U.S. oil production and 24 percent of natural gas production came from the Gulf of Mexico. Annual offshore gas production peaked in 1980 and matched the peak again in 1990. Gulf OCS oil production peaked in 1971, followed by an 8-year decline. Oil production increased between 1982 and 1986 and then declined for the next 4 years (MMS, 1997).

Weak prices discouraged even large companies because the higher front-end costs, greater drilling costs and longer lead times made prospects in other areas and other nations more attractive (Hagar, 1984). Development of horizontal drilling techniques facilitated multiple completions from single sites, improving the economics of drilling both offshore and on shore. Contractors worked to develop newer versions of Tension Leg Platforms (TLP), which would work beyond their 600-feet limits, extending to 1,500 feet or more, because doing so would achieve economies: the TLPs, unlike permanent platforms could be moved to different locations (*Oil and Gas Journal,* July 23, 1984 and September 21, 1992). As technology made deeper drilling more affordable, companies undertook deeper exploration. Technological transfers from North Sea experience were constant during the 1980's, notably Conoco's installation of the first successful TLP in the North Sea during 1984. Six years later, Shell introduced the TLP to the gulf. Hamilton Brothers Oil & Gas, LTD developed a semisubmersible floating production facility (SSFPF) for North Sea use in the same period (*Oil and Gas Journal,* May 5, 1986 and July 30, 1990). Successful discoveries of natural gas sustained some activity, largely because finding costs for onshore gas rose as deeper drilling and smaller finds began to shift exploration economics to favor offshore activity by the end of the 1980's (Hovath, 1987). By the end of the decade, competition for leases was relatively high and companies were finding strong natural gas reserves, but the success rate in drilling was beginning to decline.

In the mid-1980's, the gulf offshore oil industry suffered major setbacks when the price of oil dropped significantly following a world wide period of rising prices and expanded production that led to a decline in oil consumption. The bust of the world oil market in the mid-1980's was felt locally in Louisiana and Texas coastal parishes and counties with a heavy oil industry presence. Unemployment was high; many people left the area.

Conventional wisdom on OCS production indicated a long, slow decline, because it was thought the most promising fields had been found and were approaching or had passed their peak production capacity. This perception changed in the early to mid-1990's when there was an upsurge in activity in response to new technology to extend the life of existing fields and deep water discoveries and the technology to bring the fields into production. Operators continued to apply new technologies, including three-dimensional drilling, extended reach drilling techniques, personal computer applications to identify formations, spot areas in old fields for further exploration, and cut drilling and operating costs (*Oil and Gas Journal,* April 27, 1992). The number of lease reassignments increased. From about 1993 to 1998 there was a flurry of activity related to deep water activity, a new chapter in the offshore oil industry. The Deep Royalty Relief Act offered some incentive for larger companies to follow through on current projects, but the economics of increasingly deep drilling limited activity (*Oil and Gas Journal*, March 22, 1999).

Other oil-related events or issues of the late 1980's and 1990's include concern about oil spills. The Oil Pollution Act of 1990 and an executive order (12777) expanded MMS's authority for oil-spill contingency planning to include all offshore facilities, including those in State waters, except those associated with deepwater ports. Also in 1990, a moratorium was placed on OCS oil and gas leasing off the southwest coast of Florida until 2000.

2.4.4 Disintegrating Urban Fabric

Onshore, the economic and social trends of the 1980's and 1990's indicated that the Sunbelt was not an unbroken sky of prosperity and upward mobility. Although the urban centers of Florida's Panhandle thrived, further west in Mobile and New Orleans, tourism and oil could not sustain a disintegrating urban fabric. Like many older cities in other parts of the country, Mobile and New Orleans became increasingly black and poor in the post-civil rights era. Eight out of every ten blacks in the New Orleans Standard Metropolitan Statistical Area lived in New Orleans; and eight out of ten whites lived in the suburbs as of 1990. Houston would have shared this fate were it not for Texas' liberal annexation laws which enabled the city to dilute its poor black and Hispanic population with affluent suburban whites. Mobile and New Orleans reflected all of the ills of Newark and Detroit, without the benefit of State support. Deteriorating public school systems, police corruption, decaying infrastructure, chronic poverty, and crime reflected the legacy of white flight and an economy too dependent on low-level service occupations (U.S. DOC, BOC, 1990).

A basic problem of both cities (and many other Gulf Coast urban areas from Alabama west to Texas) is a poorly educated and inefficient labor force that serves as a deterrent for industry. In 1978, a local journalist characterized New Orleans as "the municipal equivalent of a banana republic, a tropical paradise where the friendly natives unload the freighters by day and pull down the tourists' beds for the evening." In the late 1970's and early 1980's, oil money built gleaming office towers and new high-rise hotels to cater to increasing numbers of tourists. The region around New Orleans experienced a significant boom. By 1980 the southeastern Louisiana subregion grew to include nearly 53 percent of all the people living in Louisiana. Despite the growth, civic leaders in the region did little to advance the service levels or quality of life of their constituents. Jefferson Parish has earned a reputation as the "most parasitic suburb in the United States" (Bernard and Rice, 1983). Despite its status as the State's wealthiest parish, Jefferson's refusal to tax itself has produced schools of questionable quality; inadequate parks, drainage, and transportation; and the parish has no auditorium. These suburbanites rely on New Orleans for those services that they prefer not to pay for themselves.

However, New Orleans is hardly in a position to support suburban freeloaders. Economist James R. Bobo noted at the height of the oil boom that New Orleans still needed to "establish a social equilibrium to be certain that economic success is available to everyone" (quoted in Bernard and Rice, 1983). Perhaps as much as one-half of the New Orleans labor force has been underemployed since the late 1960's. Actually, the oil industry's impact on New Orleans generally has been relatively minor. Most of the nonexecutive jobs associated with the industry are not located in the city, but are upriver or along the coast. Of the $6.5 billion in industrial investments made in the eight-parish New Orleans area (the River Region plus St. Tammany) between 1956 and 1979, half went to three suburban parishes -- St. Charles, St. James, and St. John the Baptist. This trend accelerated from 1975 to 1979 when 86 percent of such investments went into these three parishes. The capital- and energy-intensive industries demand skilled workers only. The downtown oil-firm employee is a white-collar worker. Some oil money undoubtedly trickles down to the poor through the consumer and service demands made by such well-paid employees, but oil industry jobs are not direct opportunities likely to benefit inner-city blacks (Bernard and Rice, 1983).

The port of New Orleans, a historic provider of entry-level jobs, has struggled to compete with Houston and Tampa. Even then, the modern container ship is a labor-saving innovation that reduces the number of jobs available for unskilled workers. Tourism is a mixed blessing. More than 50 percent of the jobs associated with the tourist industry are lower-echelon service positions. Michoud provided only temporary relief. The space program did not generate great development or cause a massive in-migration to New Orleans as it did in more dynamic Houston. Also, unlike the Manned Spacecraft Center in Houston, the Michoud plant was simply a production facility. It had a narrower skill-mix than the Houston site, which had both scientific and managerial responsibilities (Bernard and Rice, 1983).

2.4.5 Political Culture and Power

Louisiana's political culture did not help the situation in New Orleans. The State's constitution prohibits local governments from levying income or severance taxes, and greatly restricts the income derived from property taxes. During the administration of David Treen in the early 1980's, Louisiana's homestead exemption jumped from $50,000 to $75,000, which means that a homeowner does not pay taxes on the first $75,000 of assessed value. In recent years, the Louisiana Association for Business and Industry has sought to decrease the exemption, but suburban interests have effectively fended off these attempts. Local historian Arnold Hirsch estimates that, roughly 90 percent of the homes in the cities fall under the exemption (Hirsch, oral commun., 1997). The city (and all Louisiana cities, for that matter) must rely on a regressive sales tax which has hovered over 8 percent during the past decade and from which New Orleans derives three-quarters of its operating revenues. New Orleans cannot fund existing services adequately, let alone build the infrastructure on undeveloped land that would attract new industry.

Finally, there is the affliction of tradition in New Orleans, a condition that affects Mobile to a lesser extent. Oil executives in New Orleans maintain that, while Houston "aggressively courted the oil industry," the "conservative character" of New Orleans' leadership proved much less proactive. As John G. Phillips, chairman of the Louisiana Land and Exploration Company explained: "New Orleans remains an older, more traditional, less risk-oriented economy, while Houston's economy and leadership are more risk-oriented" (quoted in Bernard and Rice, 1983). Sometimes this suspicion of change can work in the city's favor as witnessed by the long and bitter controversy over the proposed Riverfront Expressway. More often, it is an obstacle in the way of community development. There is a pronounced distaste for crass materialism among the old elite who are preoccupied with social rituals, such as Mardi Gras, which reinforce and emphasize their status. On a daily basis, the elite retreat behind the social parapets of the Boston, Louisiana, and Pickwick clubs. New Orleans is a city in which it is perfectly proper to keep a luncheon club member at the rummy table while a client waits at the office. This elite is native born, with family roots sunk generations deep in local soil. In few other American cities does birth, as opposed to achievement, count for so much. There is a severance between political and social leadership, especially since blacks have grown dominant in local politics. Such divisions prevent united community-wide efforts to solve raging social and economic problems.

Unlike New Orleans, political power in Houston is still based in the business community. Although that power is more diluted and is increasingly shared with other groups, especially Hispanics, the business community sets the basic agenda for the city. That community includes bankers, realtors, developers, investors, builders, and the large law firms, reflecting Houston's increasingly diverse economy. With the continued influx of newcomers, the culture and values of Houston support the concept of unlimited economic opportunity provided by the business community. Although power is increasingly shared with minorities,

the minority leaders are often businessmen who share the basic values of their white contemporaries (Bernard and Rice, 1983).

It should be noted that the constitutions of the gulf States organize the branches of government differently. For example, the legislatures of Florida, Louisiana, and Mississippi meet annually. In Texas it meets every 2 years. And, in Alabama it meets every 4 years. The distribution of power established in each State's constitution has implications for the likelihood of effective involvement in economic development. The distribution of power differs among the five States, and, in most instances, the prevailing political culture combines with the structure of government to have policy implications for development at the local level. The interaction between culture and structure is most evident in the States of Louisiana and Texas.

The 1974 Louisiana Constitution provides substantial home rule, so state influence is most obvious when State agencies control the money (as for Charity hospitals), the licenses (as with river boats), or both (universities). Home rule allows cities great discretion in the use of its funds from its own bonds, but little discretion in the use of State funds. Even prior to home rule, it was possible for parish bosses to emerge and build up financial and patronage bases of substantial proportions. Leander Perez's empire in Plaquemines and St. Bernard parishes is the most notorious example of such influence. In Louisiana, however, it has not been exceptional for individuals to build fortunes out of politics -- the World's Fair and river boat and hospital licenses come most readily to mind. Perez's oil leases, however, may have been unique in the amount of ongoing money and in the intersection of economic and political power.

Perhaps the most interesting feature of Louisiana politics today is the absence of a politically-dominant group. Politics, therefore, is quite open. The openness inhibits the accomplishment of important legislation. Despite the strong governor system, the parishes, therefore, retain considerable power.

The parishes themselves are in the throes of reorganization, as urban and suburban parishes abolish police juries and install council systems. There is a vast difference between parishes governed by police juries and those governed by councils. Under the police jury system, each police juror had much more power over road repair, to give one example, in his or her individual district than any other juror. Under the council system, power is far more concentrated in the hands of the independently elected parish president. As parishes change to the council system, the battle for control is sometimes fierce, often with powerful families arrayed against each other, especially in rural parishes. It is in these parishes that there exists the greatest potential for the emergence of a "virtual parish dictator" (Rose, oral comm. 1999; Hyde, oral comm. 1999).

In some respects, Texas is almost a mirror image of Louisiana. The State has one of the weakest governors in the South, and, in fact, it has one of the constitutionally weakest State

governments in the region. This system derives from the Reconstruction era when the "Redeemers" rewrote State constitutions to ensure that bits of authority were invested in a host of elected State officials, and, therefore, in no one. Texas does not have a State income tax and relies heavily on a regressive sales tax for its revenues.

A unique feature of Texas government is the system of funding public education. Counties have no role in public education. The education code is administered by the Texas Education Agency and the 1,100 school districts. Costs are shared (roughly on 50 percent-50 percent basis) by the State (through the sales tax) and the districts (through the property tax).

Apart from these structural elements which might appear to inhibit policy formulation and implementation, Texas has put into place a number of progressive policies during the past two decades. Though the State is vigorously pro-business, it also has among the most enlightened social legislation in the South. A major reason for this is the demographic and religious diversity of the State, highlighted by the relatively large Hispanic population, the presence of large, cosmopolitan metropolitan areas, and a mixed economy strong in extractive industries, services, and education. These economic activities have generated their own constituencies that also tend to moderate State policies (Calvert and De Leon, 1990; and Hobby, oral comm. 1999).

The wealth and diversity of Texas combined with a heritage of moderate politics transcend the relatively weak structure of State government. In Louisiana, despite the constitutionally-strong governor, considerable power rests in the parishes where, historically, personal politics has typified the political process.

2.4.6 Environmental Issues

Environmental issues have moved to the political foreground in many Gulf Coast States and among a broad spectrum of the region's population. Although offshore oil drilling has provided significant income for Louisiana and Texas, and their residents, concern grows over the potential for oil spills. In 1979, an oil spill in Mexico fouled the Texas Gulf Coast. Five years later the tanker *Alvenus* dumped crude oil off the Louisiana coast.

Impoverished Gulf Coast residents are also joining the environmental chorus, especially in Louisiana where government officials have allowed the petrochemical industry considerable latitude. "Cancer alley," a corridor stretching along the Mississippi River from Alsen in suburban Baton Rouge down past New Orleans, has become a notorious metaphor for unchecked corporate pollution. Louisiana has consistently scored at the bottom of the *Green Index*, an annual standard of environmental health in the South, published by the Institute for Southern Studies in their magazine, *Southern Exposure*. The State also ranks at or near the bottom in basic lifestyle indicators such as infant mortality, households without plumbing, the number of doctors delivering patient care, and the number of workers in high-risk jobs. On the other hand, the State has been historically generous to the petrochemical firms. During the

1980's, for example, the 30 largest corporations in the State, many of them in the petrochemical field, received $2.5 billion in Louisiana property-tax exemptions. These exemptions did not necessarily result in more work for the State's labor force; relatively few new permanent positions were created by the windfall. Louisiana has transformed in the twentieth century from a poor agricultural State to a poor industrial State (Bullard, 1994; *Southern Exposure*, 1993).

The vast majority of residents living near the petrochemical plants along "cancer alley" are black, a population historically restricted in both political and economic rights in Louisiana. Concerns about "eco-racism" emerged from both the civil rights movement of the 1960's and 1970's, and the environmental movement of the 1970's and 1980's. While middle-class Gulf Coast residents promote the conservation of gulf fisheries and the adoption of stricter land use regulations to enhance their property values, poor Gulf Coast citizens have battled local and State authorities to control severe industrial polluters onshore and the incineration of hazardous waste offshore (Maril, 1986).

On land, hazardous waste facilities are often located adjacent to black communities like Alsen, La. During the mid-1980's local residents successfully organized, with the help of the Sierra Club and Greenpeace, to block the incineration of PCBs in their neighborhood. A report issued by the Environmental Protection Agency in 1993 confirmed residents' suspicions of a strong correlation between the location of polluting plants and waste facilities and black districts (Bullard, 1994). Several companies, such as Georgia Gulf, Dow Chemical, and Placid Refining Company have dealt with the problem by purchasing black communities near their facilities. Similar organized activities of poor black and Hispanic residents have occurred in Brownsville, Tex., in 1983, to protest the burning of carcinogenic wastes in the Gulf of Mexico off Brownsville, and in Houston's black neighborhoods where all of the city's landfills were located, as well as three of the four privately-held sites in the city in 1980. In June 1997, the Louisiana National Association for the Advancement of Colored People (NAACP) organized a demonstration for eco-justice in Baton Rouge that drew 10,000 participants. These protests have had mixed results: some amelioration of pollution, outright purchase of adjacent properties, and, in Houston, at least, little success in locating landfills in other parts of the city (Maril, 1986). Nevertheless, environmental issues now loom large in the considerations of both middle-class and poor gulf residents.

2.4.7 Southern Political Parties

Recent political history in the Gulf Coast region does not offer evidence that historical social and public policy trends will change to the benefit of underemployed and impoverished residents. The passage of the 1965 Voting Rights Act altered the landscape of southern politics. Prior to 1965, fewer than 20 percent of the region's black population could vote; the figure was considerably lower in Alabama, Mississippi, and Louisiana. After 1965, black voters streamed into the Democratic Party, the party they associated with the civil rights legislation of the 1960's. Ironically, at the State and local levels, the Democratic Party in the

South had been a bastion of white supremacy since the 1890's. In the mid-1960's, black voters entering polling booths in Alabama pulled Democratic levers emblazoned with an eagle whose talons clutched a banner with the inscription, "White Supremacy."

The influx of large numbers of blacks into the Democratic Party coincided with and related to the revival of the Republican Party in the South. Barry Goldwater's 1964 Republican presidential candidacy was a catalyst for Republican politics in the region. Goldwater had voted against the 1964 Civil Rights Act and even if he had vowed, as one southern journalist noted, to collectivize all the farms in Mississippi, he would still have been a hero to that State's white population. Although he won only six States nationally, he ran strongest in the Gulf Coast States of Alabama, Mississippi, and Louisiana. He received 87 percent of the vote in the Magnolia State. Before the 1960's, the Republican party in the South, such as it was, appeared among a scattering of voters in the cities and in the mountain counties of Virginia, North Carolina, and Tennessee. "Moderate" would be the most appropriate description of these Republicans. They counted few rabid segregationists among them and favored economic development policies.

The civil rights movement and its aftermath changed both the nature of the tiny southern Republican Party and southern politics. Although whites usually retained their Democratic registration and often voted for local Democratic candidates, they increasingly cast ballots for Republicans. A survey of House and Senate leadership and key committee chairs in the 1990's revealed the inordinate power of southern Republicans at the national level. This power has sifted down to the States with Republican administrations in Alabama, Mississippi, and Texas. After a brief liberalization of southern politics during the early 1970's, growing Republican might has returned several southern States to the political culture of the pre-civil rights era: low taxes, meager social service expenditures, and large subsidies to migrating firms. In the 1990's southern States spent significantly more on roads and highways than did States elsewhere. They provided relatively fewer services, and expenditures for such programs as Aid to Families with Dependent Children were substantially below national averages (Goldfield, 1993).

At the same time, the re-emergence of the religious right since the 1970's, and the formation in Virginia of the Christian Coalition in 1989, has infused the southern Republican Party with a well-organized and committed group of workers and voters who promote a moral agenda that replays many of the battles of the 1920's. Alabama's Republicans have been in the forefront of this crusade with conflicts over school prayer and the teaching of evolution in the public schools. Republican Governor Fob James threatened State interposition in rhetoric reminiscent of the State's defiance in the 1960's to protect the right of a judge to post the Ten Commandments in his courtroom. Such actions tend to deflect attention away from educational, social service, and development issues, or at least interpret those issues in sectarian terms.

Some of the Gulf States' inertia to deal with social issues reflects a growing national consensus that these problems are beyond the capability of State and local governments anyway. Suspicion of government at any level remains strong in the South. There is a reluctance to address such issues as increased aid to education, the problems of underemployment, social service levels, and environmental protection. Advancing on any of these fronts might increase taxes (a political nightmare), compromise the sanctity of private property, or threaten the State's "good business climate" (defined as non-union labor, weak regulations, and strong subsidies to industry). However, it is also true that if leaders perceive political and economic benefits deriving from particular social policies, they will likely embrace them. With the exception of Louisiana, there are strong environmental and education movements in all Gulf Coast States across a wide spectrum of the population. Good business climate, in other words, can encompass selective social policies given the right set of circumstances.

2.4.8 Other Changes

It is also important to note that State action in the South may depend on Federal initiatives. Civil rights legislation is one obvious example of Federal involvement in local social policy. Equally important, Federal funding has served as a key economic catalyst for the gulf States since World War II. Identified as an economic failure in 1938, the South has emerged at the end of this century as the national poster region for the American economy. The American South's rise to prominence has resulted from a confluence of factors of which Federal funding was an important, but by no means the sole element. The South's racial accommodation released the energies of millions of black southerners to participate more positively in the regional economy, and it also improved the South's image nationally. The expansion of wealth in postwar America and, especially since the 1960's, resulted in earlier retirements and more leisure and vacation time. The South's climate, low taxes, friendliness, and general quality of life attracted retirees and visitors. Florida leads the nation in the mailbox economy: retirees who receive their pension and social security checks earned in other parts of the country resulting in the greatest single capital transfer between regions in the United States. The Gulf Coast States have enjoyed a growing tourist industry, along the beaches of Texas, the Panhandle of Florida, and the Mississippi and Alabama coasts.

The South has also benefited by comparison with the North and the rest of the nation after 1965. The ink was scarcely dry on President Lyndon B. Johnson's signature that made the Voting Rights Act the law of the land, when the Watts district in Los Angeles erupted in racial conflict. In a series of long, hot summers over the next 3 years, America's racial problems were suddenly revealed as national in dimension. The civil rights struggle had highlighted racial inequities in the South, but the civil disturbances of the late 1960's indicated that race was indeed an *American* dilemma. Just as suddenly, the South's image as a benighted, bigoted region changed. Southerners had seemingly reached a racial accommodation, their cities were calm, and their economies boomed. As heavy industry collapsed in the Rust Belt,

and racial tension ignited across the North, the South seemed like a better place to live, work, and retire.

This change in image coincided with changing trends in how firms organized and conducted their business. Corporations learned that all activities need not occur under one roof. Out-sourcing accelerated during the 1980's and after, and the South with, again, its cheaper labor, cheaper land, and quality-of-life amenities became a prime location for back-office operations. Airlines instituted hub-and-spoke systems rather than concentrating flights in New York and Chicago to the great benefit of Atlanta and other southern airports. As the consumer base grew in the South, branches of major firms and retail outfits came south. And migrants from other parts of the country followed. By the 1990's, the South was the most sought-after region in the country in terms of migration. In less than half a century the South has been transformed.

2.5 Conclusion

While the South has been transformed, some things have remained the same. In the 1930's, Mississippi novelist Stark Young responded to concerns that industrialization and urbanization would overwhelm southern traditions. Young assured the doubters that the South "could accept the machine, but create our own attitude toward it" (Young, 1930). Generally, that is what has happened. Vast economic changes have occurred in the South since Young's reassurance. Some of these changes have been superficial or merely a reworking of the old theme of labor and land exploitation. The tenacity of poverty and underachievement in Alabama, Mississippi, and Louisiana testifies to the persistence of historical factors as shapers of contemporary life. Other economic changes have struck deeper, and Texas and Florida are the strongest examples of those transformations. Even in these more prosperous gulf areas, however, success has left many people behind and many cultural traditions and institutions intact.

There is also a question as to whether the Federal government will continue to play a key development role in the South, or anywhere else for that matter. The trend in recent years has been to shift some Federal responsibilities to the States without a consequent transfer of funding for those programs. Southern States have historically lagged behind the rest of the nation in the degree of support afforded to social services. Voluntary contributions and corporate good works have formed a greater part of the social service landscape in the South than in other regions of the country. Despite the positive nature of voluntarism, it cannot fully address the persistent problems of poverty and underemployment.

Fiscal conservatism has also characterized support for public education at the State and local levels, though southerners have improved their rankings in the past decade. Historically, there has been little need for an educated workforce. The abundance of cheap and relatively unskilled labor has functioned as an important "selling" point to attract industry and other economic activity. The types of economic activities that truly develop rather than merely

grow an economy require skilled workers. Knowledge function industries will grow substantially in the coming years and the southern workforce is not well-prepared for that trend. The Silicon Hills in and around Austin, Texas, and North Carolina's Research Triangle Park belie such concerns, but firms in those areas have succeeded because, for the most part, they have imported their highly skilled workers. The South has not only been the region of huge capital transfers, but of people, technology, and skills as well. All of this is fine for the general State and urban economies, but such migration does little to solve problems of underemployment and the persistent poverty among minority groups. At the same time, the surge in overseas immigration to the South exacerbates the employment woes of those long-time residents who possess few skills and resources to compete at the higher levels of the post-industrial economy.

Ultimately, in our Federal system, States play an important economic and social role, and given the devolution trends of recent years, their role will expand in the future. Although Florida and Texas have problems of infrastructure and pollution, and possess a political culture more comfortable with fiscal conservatism and private initiatives than with an expansive public sector, prospects are bright. That is much less the case for Alabama, Mississippi, and Louisiana. Historically, racial divisions, a weak economic base, and inadequate, incompetent, and often corrupt State administrations have limited the effectiveness of these governments. Alabama's incentive package to the Daimler-Benz corporation reflects traditional economic development efforts through the recruitment of industry. The State paid roughly $200,000 for each job the Mercedes plant will recruit. In Mississippi, the Republican-dominated State administration views tax-cutting and decreased expenditures as the highest priority in one of the nation's poorest States. In Louisiana, politics of the extreme are often the norm, and sectional, religious, racial, and political divisions that make similar differences in other States seem benign by comparison.

Cities often assume characteristics of their States; in a Federal system, this is not surprising. In the South, it has been perhaps more so because of regional distinctions. Compare, for example, Houston and Tampa with New Orleans and Mobile. Texas and Florida are generally more prosperous, boast a more diverse economy, and a more progressive local and statewide leadership than either Louisiana or Alabama. All the Gulf Coast States have experienced periods of boom and bust; but the booms in Alabama, Mississippi, and Louisiana have not generated a sufficiently diverse economic development nor a particularly high quality workforce. The coastal areas of Mississippi and Louisiana have generally fared better than the interior districts of those States; not so in Alabama, where Birmingham is experiencing a revival. The highly-touted Tennessee-Tombigbee Waterway has provided markedly fewer economic benefits than Mobile boosters had hoped. Larger barge trains move faster on the Mississippi River than on the lock-impeded Tenn-Tom. Perhaps the most important legacy of the Waterway is that it probably marked the end of an era of Federal support for such massive water projects. The Corps of Engineers has recently turned much of its energies to projects aimed at restoring the environment (Stine, 1993).

The close relationship between cities and their States highlights the fact that geographical contiguity along the Gulf Coast has not resulted in historical continuity. Specifically, the region's history points to the emergence of three subregions: the Texas Gulf Coast; the Florida Gulf Coast; and the coast bounded by Alabama, Mississippi, and Louisiana.

The dynamic city of Houston gives the Texas Gulf Coast its character: brash, bold, and future-oriented. When the first post-war oil boom occurred in the 1970's, Houston was well on its way to diversifying and globalizing its economy. The boom diverted Houston from this process, but the collapse of the 1980's, though painful, enabled the city to broaden its economic base in the 1990's. Houston and the Gulf Coast of Texas benefits from a prosperous State with an excellent system of higher education, a high-tech center in Austin, and banking facilities in Houston and Dallas (though controlled by out-of-State banks).

The Gulf Coast of Florida reflects some of the same characteristics as its counterpart at the other end of the gulf. It is a growing and prosperous region. The Panhandle especially has emerged from the shadow of Alabama to reflect more of the prosperity of the Sunshine State. The rapid growth of tourism and second-home development, along with greater environmental sensitivity should benefit Florida's Panhandle. The heavy military investment there, while precarious given the current downsizing, has not lulled communities like Pensacola as they work to diversify their economies (Tamberrino, 1993).

In the third subregion comprising Alabama, Mississippi, and Louisiana, the burdens of southern history weigh most heavily. In these States, most indices of modern civilization lag behind the rest of the nation, including per capita income, educational levels and expenditures, infant mortality, and health care. Investment in human capital has not been a strong suit in these States. Chronic poverty, tight control by a ruling elite, and endemic racism have short-circuited attempts to rectify decades-old problems. The coastal areas of these States are most vulnerable to boom-bust cycles, less likely to be prepared for them, and less able to deal with the consequences than Gulf Coast areas in Florida and Texas. The recent dominance of the Republican Party in these States militates against greater public investments in human capital. Instead, business subsidies, maintaining low tax structures, privatization, and sectarian-inspired issues are likely to crowd legislative agendas. Still, there are some bright prospects. Mississippi has tried to make its higher education system competitive; the community college system in Alabama is effective in its vocational programs; and grass-roots environmental movements are growing in Louisiana. The tourist industry has also taken root along the Alabama and Mississippi Gulf Coasts.

Even in the Gulf Coast areas of Florida and Texas, though, the general prosperity and relative progressive political culture of those States confront serious challenges. The coastal areas of these States include sensitive ecological environments that could be irreparably harmed by further development. The large influx of unskilled immigrants presents social, ethnic, and financial problems for these States and for the jurisdictions which receive them. Equally troubling, historic patterns indicate that the periodic economic booms have either not involved

the lowest-skilled and least educated resident workers, or their impact has been temporary. The Gulf Coast cannot "grow" itself out of these social and economic disparities. What is needed is not so much new economic development as more investment in human capital and increased social services. Given the political trends and the historic proclivities of State and local governments in the region, the likelihood of formulating and implementing such policies is not good.

It is important to keep in mind that the South is hard to predict. The President's economic report in 1938 and the persistence of white supremacy, segregation, and one-party politics through the first half of the twentieth century would have led most experts to believe that little good could come out of this region except the people who escaped it for a better life elsewhere. Yet, in little more than a few decades, a blip in historical terms, the South has been transformed into a prosperous region with nation-leading growth rates. Legal segregation crumbled and race relations are arguably better in the South than anywhere else in the United States. If it is true that Americans vote with their feet, then African Americans have been voting for the South since the 1970's when the region experienced its first net-inmigration of blacks since the days of the slave trade. Although many of the old conservative shibboleths remain, the political process in the South more closely resembles the rest of the nation and is considerably more open than it was little more than a generation ago. These changes have undoubtedly changed the South, though the degree to which they have changed the region's culture and social and economic divisions is much less clear.

The Gulf Coast landscape represents a land of incredible beauty from the dark bayous of Lafourche Parish in Louisiana to the sugar-white sands of the Florida Panhandle; there are also urban wastelands, garish development, and the unseen trails of deadly toxins. It is a region whose identity is tied closely to the States which comprise its boundaries, yet with an identity and a history of its own. The people, the land, the economy, and the political culture derive from those places and their histories, and that legacy will shape the future. The Gulf Coast is many things, but above all, it is the South.

3.0 Gulf of Mexico OCS Oil and Gas Activities

3.1 Introduction

This section discusses oil and gas activities from several perspectives. The first is the broad or regional view that looks at (1) OCS oil and natural gas production as a portion of total U.S. production; (2) GOM OCS oil and gas production as a portion of total U.S. oil and gas production; and then (3) GOM OCS oil and gas production as a portion of total U.S. OCS oil and gas production. The second perspective takes a more narrow view and examines activity by State. Louisiana and Texas are the States with most of the offshore activity and the longest history of activity.

Crude oil and condensate (hereafter referred to as crude oil) and natural gas extraction from the broad perspective or total Gulf of Mexico perspective are discussed in terms of:

- Sales volume -- a physical measure of the quantity of oil and/or condensate or natural gas sold
- Sales value -- a measure of the total revenues or dollar value received by producers for oil and/or condensate or natural gas sold
- Price -- the cost per barrel for oil or million cubic feet for natural gas

Sale value and price are presented in 1998 constant dollars. Conversion to constant 1998 dollar value used the gross domestic product implicit price deflator. The data series for sales value and price covers the period 1959 to 1995. The data series on sales volume covers the period 1954 (the beginning of the OCS leasing program) to 1995, which is the most recent available data.

The discussion by State is limited to production of crude oil and natural gas. The information on offshore activity is from the Minerals Management Service, Federal Offshore Statistics, 1995. As noted in the sources to the figures, other information came from the Energy Information Administration, and for State production from the Louisiana Department of Natural Resources and the Texas Railroad Commission.

3.2 Gulf of Mexico OCS Oil and Gas: An Important U.S. Energy Resource

The broad view of OCS activities looks at OCS as a portion of U.S. oil and gas activities. Figures 3-1 and 3-2 compare sales volume of crude oil and natural gas from OCS and non-OCS areas. Federal OCS oil and natural gas production as a portion of total U.S. production has generally increased since 1954. There was a slight decrease, however, from 1977 to 1982. Federal OCS crude oil production peaked as a portion of total U.S. production in 1995, at 17.4 percent. Production of OCS natural gas as a portion of total U.S. production peaked in 1990 at 27.4 percent. Figures 3-3 and 3-4 compare Gulf of Mexico OCS and non-Gulf of Mexico OCS areas in terms of sales volume of crude oil and natural gas. As can be seen in the

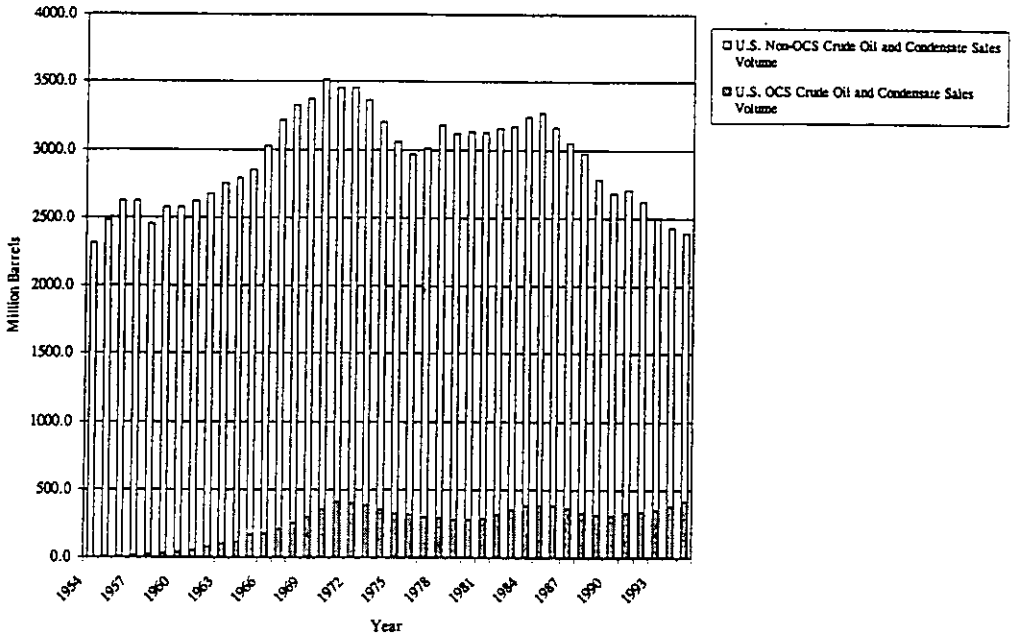

Figure 3-1. U.S. crude oil and condensate sales volume, 1954 to 1995.

Source: DOI, MMS, 1998. Energy Information Administration, 1998.

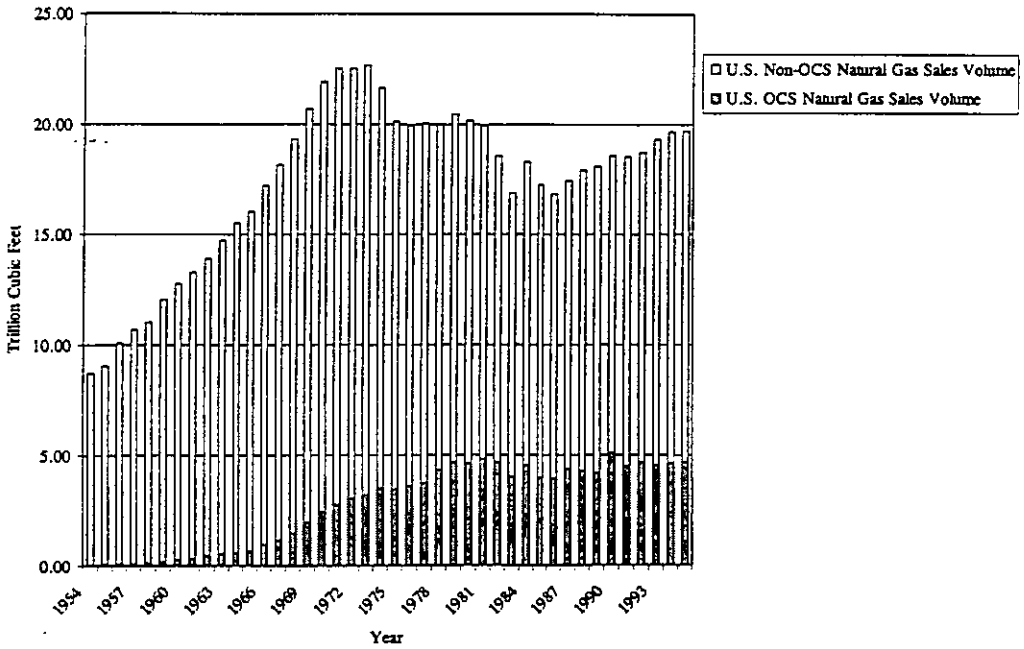

Figure 3-2. U.S. natural gas sales volume, 1954 to 1995.

Source: DOI, MMS, 1998. Energy Information Administration, 1998.

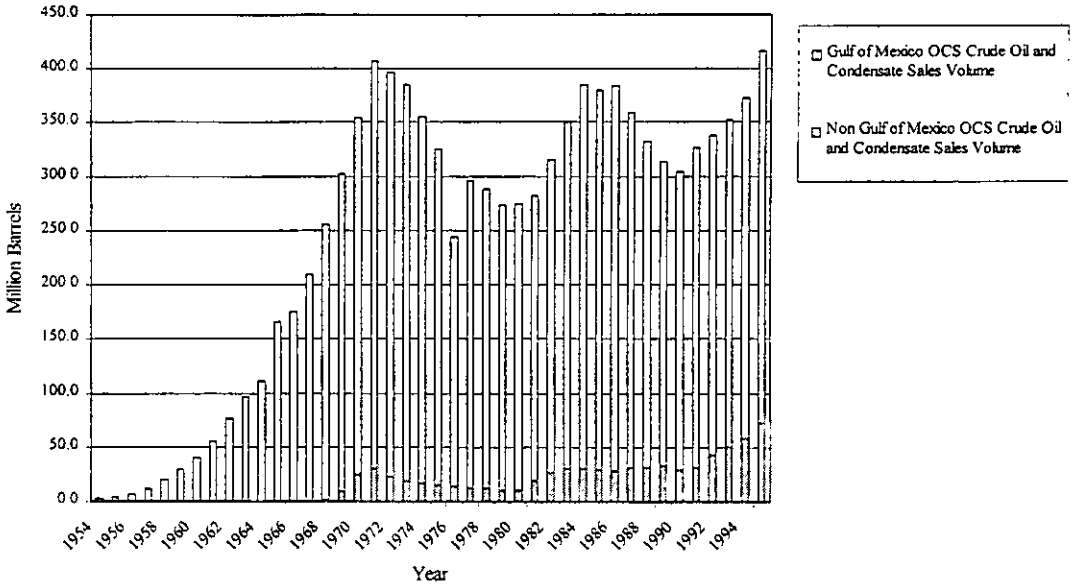

Figure 3-3. OCS crude oil and condensate sales volume, 1954 to 1995.

Source: DOI, MMS, 1998. Energy Information Administration, 1998.

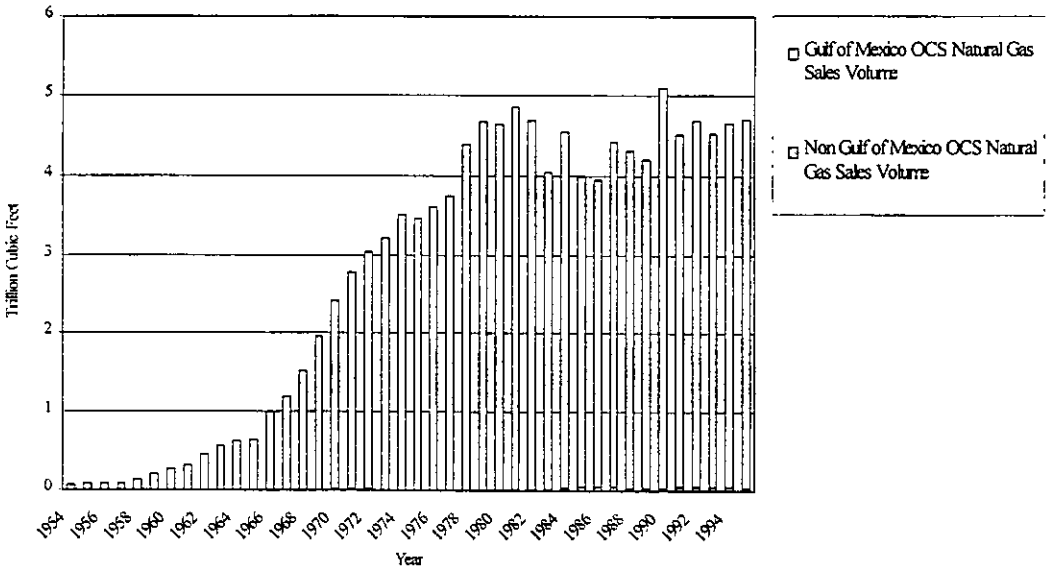

Figure 3-4. OCS natural gas sales volume, 1954 to1995.

Source: DOI, MMS, 1998. Energy Information Administration, 1998.

figures, Gulf of Mexico OCS production accounts for the majority of OCS production of crude oil and natural gas.

Figures 3-1 through 3-4 demonstrate that OCS oil and gas sales volume have risen to be important sources of U.S. oil and gas sales volume; GOM oil and gas sales volume are large portions of total OCS production; and therefore, GOM oil and gas sales volumes are important sources of total U.S. production. Table 3-1 illustrates these points using 1995 as an example.

Table 3-1. Contribution of OCS and GOM OCS crude oil and natural gas to total production and OCS production, 1995.

	Crude Oil and Condensate	Natural Gas
OCS Production as a % of Total U.S. Production	17.4%	23.8%
GOM OCS Production as a % of Total U.S. Production	14.4%	19.6%
GOM OCS Production as a % of Total OCS Production	82.6%	99.2%

Source: DOI, MMS, 1997.

The importance of the GOM to U.S. OCS activities is further illustrated by the following. Almost all (3,823 out of 3,891 or 99.4 percent) of OCS oil and gas production facilities in 1995 operated in the Gulf of Mexico. Of the total 80,047,859 OCS acres leased between 1954 and 1995, 66,350,942 acres (about 83 percent) were leased in the Gulf of Mexico OCS region. The Gulf of Mexico accounts for almost all natural gas produced on the OCS. There is more variation over time with the contribution of all OCS crude oil production to total production and GOM crude oil production to total OCS production.

3.2.1 Trends in Gulf of Mexico OCS Oil and Condensate

OCS oil production in the Gulf of Mexico region is primarily limited to areas off of Louisiana and Texas. Between 1954 and 1995, the sales volume of crude oil from the OCS areas offshore of Louisiana and Texas increased from 3.4 to 343.8 million barrels (see Figure 3-3). Seven general trends in GOM OCS sales volume of crude occurred between 1954 and 1995: (1) increasing between 1954 and 1971; (2) decreasing between 1972 and 1976; (3) increasing in 1977; (4) generally decreasing between 1978 and 1981; (5) generally increasing between 1982 and 1986; (6) decreasing between 1987 and 1990; and (7) increasing between 1991 and 1995.

The sales value of GOM OCS crude has been highly variable. Sales value (in 1998 constant dollars) ranged from a low of $555.2 million in 1959 to a high of $15.7 billion in 1981. Sales value in 1995 was $5,785 million. Between 1969 and 1976, the constant dollar sales value generally increased, but exhibited an oscillating pattern (increasing in one year and then decreasing in the next) between 1971 and 1972, 1974 and 1975, and again between 1976 and 1977. In addition the range between the annual high and low values generally increased over time. Between 1978 and 1981, the sales value increased until its 1981 peak level. Since 1981, the sales value of GOM OCS crude has generally decreased, but with a slight increase between 1983 and 1984, 1988 and 1990, and 1994 and 1995 (see Figure 3-5).

The real price received for GOM OCS crude oil widely varied between 1959 and 1995 and explains most of the variation in sales value over that period. (See Figure 3-6.) The price levels do, however, closely coincide with the boom/bust years. In general, there are seven possible temporal patterns or trends in the real price of GOM OCS crude oil: (1) generally slightly decreasing between 1959 and 1972; (2) increasing between 1972 and 1976; (3) decreasing between 1976 and 1978; (4) increasing and reaching a peak between 1978 and 1981; (5) substantially declining between 1981 and 1988; (6) increasing between 1988 and 1990; and (7) generally decreasing between 1990 and 1995. Particularly extraordinary, however, was the rate of change in the real price of GOM OCS crude between 1979 and 1981 (a 167 percent increase) and 1981 and 1988 (a 63 percent decrease).

3.2.2 Trends in Gulf of Mexico OCS Natural Gas

Gulf of Mexico OCS natural gas is not only important to the regional economies, but it typically has a higher sales value than does crude oil. Gulf of Mexico OCS natural gas production generates approximately 40 percent more in royalties than does Gulf of Mexico crude oil production. In 1995, royalties received from Gulf of Mexico natural gas equalled nearly $1.2 billion, while royalties received from crude oil and condensate equaled about $0.8 billion.

Between 1954 and 1981, the sales volume of Gulf of Mexico OCS natural gas dramatically increased from 0.06 to 4.84 trillion cubic feet (see Figure 3-4). There were four peaks in sales volume: 1981, 1984, 1987, and 1990. The sales volume of GOM natural gas exhibited five general trends: (1) increasing between 1954 and 1981, except for a slight dip in 1975; (2) small decrease between 1981 and 1983; (3) a variable, but generally, decreasing pattern between 1984 and 1989; (4) an increase between 1989 and 1990 and decrease between 1990 and 1991; and (5) a very modest increase between 1991 and 1995.

As seen in Figure 3-7, sale value of GOM OCS natural gas increased between 1959 and 1982, with a steep increase between 1977 and 1982. Since 1982, the value has generally decreased with minor peak values or increases in 1984, 1990, and 1993. The 1995 sale value level was about equal to what it was in 1977.

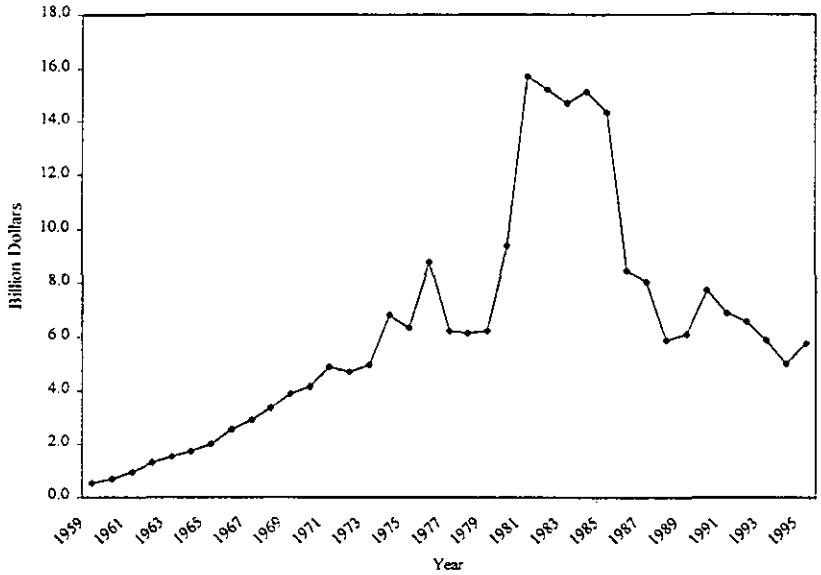

Figure 3-5. Revenue received from sales of Gulf of Mexico OCS crude oil and condensate, 1959 to 1995. Constant 1998 dollars (deflated with gross domestic product implicit price deflator)

Source: DOI, MMS, 1998.

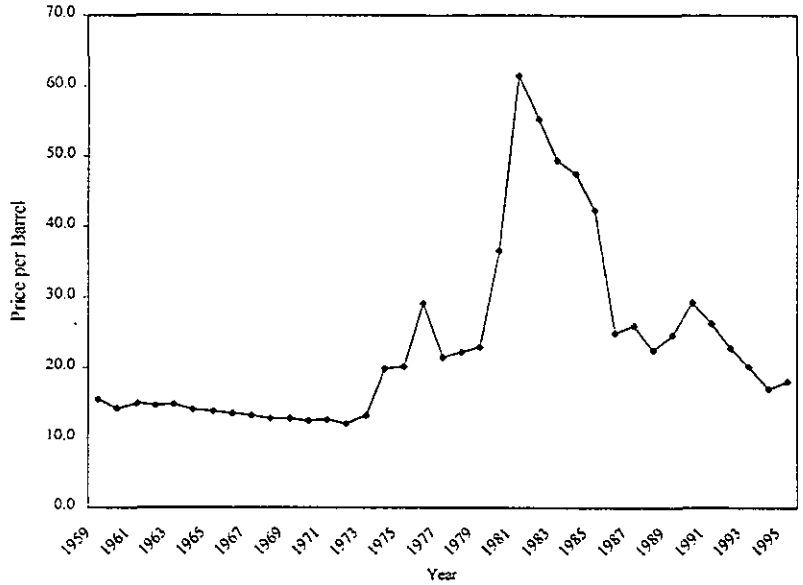

Figure 3-6. Price per barrel received from sales of Gulf of Mexico OCS crude oil and condensate, 1959 to 1995.
Constant 1998 dollars (deflated with gross domestic product implicit price deflator)

Source: DOI, MMS. 1998

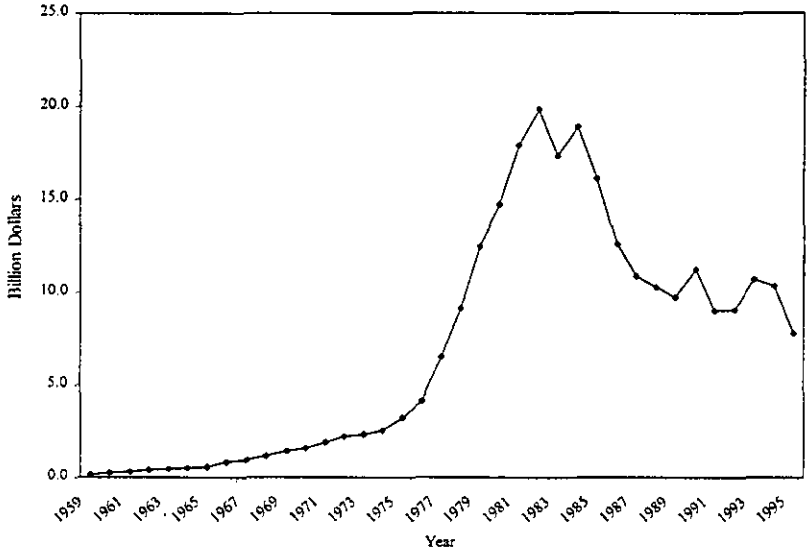

Figure 3-7. Revenue received from sale of Gulf of Mexico OCS natural gas, 1959 to 1995. Constant 1998 dollars (deflated with gross domestic product price deflator).

Source: DOI, MMS, 1998.

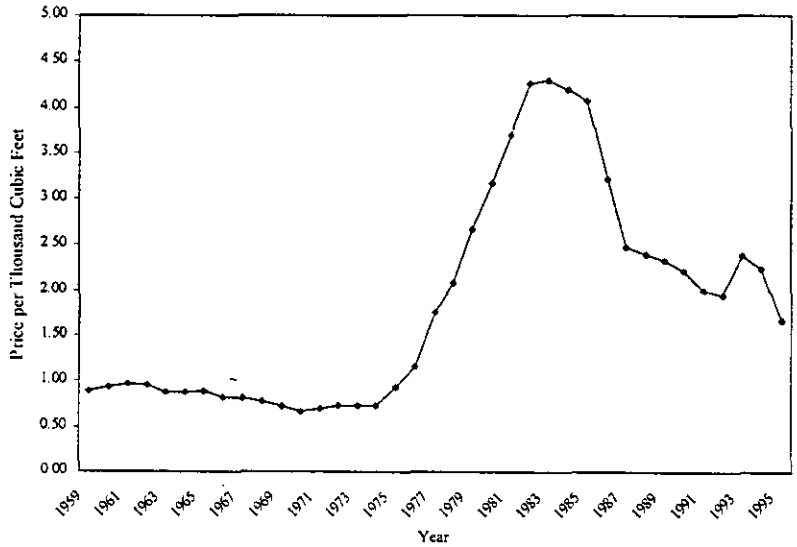

Figure 3-8. Price received per thousand cubic feet of Gulf of Mexico OCS natural gas, 1959 to 1995.
Constant 1998 dollars (deflated with gross domestic product price deflator).

Source: DOI, MMS, 1998.

Similar to the real price of GOM OCS crude oil, the real or inflation adjusted price of GOM OCS natural gas has widely varied over time. (See Figure 3-8.) Between 1959 and 1974, the price of GOM OCS natural gas fluctuated slightly up and down from year to year. Then, between 1975 and 1983, the price increased dramatically (from $0.9 to $4.29), followed by a decrease between 1984 and 1992. The price increased in 1993 before decreasing in 1994 and again in 1995.

3.3 Gulf of Mexico OCS Price Patterns and International Events

Figure 3-9 compares prices (in 1998 constant dollars) of world, U.S., and GOM OCS natural gas between 1972 and 1995. In the 1970's and early 1980's prices for GOM, U.S., and world natural gas increased substantially, but world prices increased at a much more accelerated rate to more than twice U.S. and GOM prices in the early to mid 1980's. The U.S. and OCS prices track reasonably close with the world prices for natural gas, however, since the mid-1980's total U.S. consumption began to exceed domestic production, and the United States became increasingly dependent on foreign imports of natural gas.

Figure 3-10 compares the prices (in 1998 constant dollars) of crude for the world, U.S. and GOM OCS from 1970 to 1995. Table 3-2 is a chronology of events affecting world and local oil markets and prices between 1970 and 1997 compiled by the U.S. Department of Energy, Energy Information Administration (1998). U.S. and GOM OCS crude prices track world oil prices and events affecting supplies and prices. The large peak or increase in Gulf of Mexico OCS price coincides with the peak world price and the first major fighting in the Iranian-Iraqi war. It also follows the Saudi increase in the price of light oil to $34 (in current dollars; $52.36 in 1998 constant dollars) per barrel. The major downturn in 1986 coincides with widespread use of netback pricing (i.e., the estimated net price received at the wellhead) and the Organization of Petroleum Exporting Countries (OPEC) production levels of 18 million barrels per day. Other factors influencing price declines between 1981 and 1986 include increased production of crude by both OPEC and non-OPEC nations and large price cuts by Norway, the United Kingdom, and Nigeria. Another peak price of crude occurred in 1991 at the time of Desert Storm and the invasion of Kuwait.

3.4 Annual Rate of Change in Energy

Table 3-3 summarizes some of the information presented in the previous sections by showing the annual rate of change in GOM OCS crude and natural gas sale volume, price, and sale value and U.S. crude production and price and natural gas price for five time periods. The overall rate of change from 1969 to 1995 shows a different picture than that shown in the shorter time periods. The period before 1981 was generally one of growth for most indicators, while the period after 1981 was one of decline. The boom/bust can be seen in the detail, that is the subperiods shown in the table. The rate of change smooths out over the total period, and thus, obviscates the temporal patterns coinciding with the boom and bust periods.

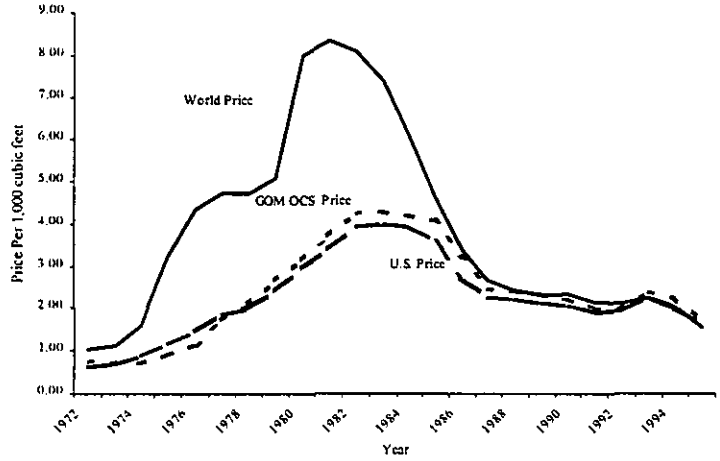

Figure 3-9. Price per thousand cubic feet, world, U.S., and GOM OCS natural gas, 1972 to 1995. Constant 1998 dollars (deflated with gross domestic product implicit price deflator)

Source: DOI, MMS, 1998. Energy Information Administration, 1997.

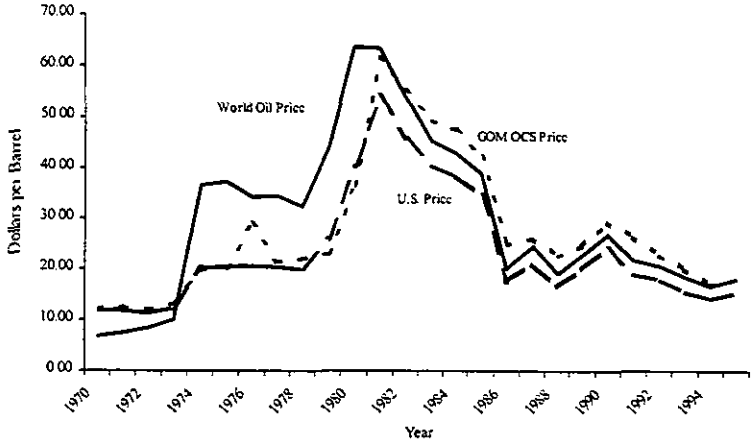

Figure 3-10. Price per barrel, world, U.S., and GOM OCS Crude, 1970 to 1995. Constant 1998 dollars (deflated with gross domestic product implicit price deflator)

Source: DOI, MMS, 1998. Energy Information Administration, 1997.

Table 3-2. World oil price chronology: 1970 to 1997.

Year	Event	
1970	1.	OPEC begins to assert power; raises tax rates and posted prices.
1971	2.	OPEC begins nationalization process; raises prices in response to falling U.S. dollar.
1972	3.	Negotiations for gradual transfer of ownership of western assets in OPEC countries.
1973	4.	Yom Kippur War occurs; oil embargo begins.
1974	5.	OPEC freezes posted prices; United States begins mandatory allocation.
	6.	Oil embargo ends.
	7.	Saudis increase tax rates and royalties.
	8.	U.S. crude oil entitlements program begins.
1975	9.	OPEC announces 15 percent increase effective October 1, 1975.
1976	10.	Official Saudi Light price held constant for 1976.
1978	11.	Iranian oil production hits a 27-year low.
	12.	OPEC decides on 14.5 percent price increase for 1979.
1979	13.	Iranian revolution; Shah deposed.
	14.	OPEC raises prices 14.5 percent on April 1, 1979.
	15.	United States phased price decontrol begins.
	16.	OPEC raises prices 15 percent.
	17.	Iran takes hostages; President Carter halts imports from Iran; Iran cancels U.S. contracts.
	18.	Saudis raise marker crude price from $19 per barrel to $26 per barrel.
1980	19.	Windfall Profits Tax enacted.

Table 3-2. World oil price chronology: 1970 to 1997 (cont'd)

Year	Event	
1980 (cont'd)	20.	Kuwait, Iran, and Libya production cuts drop OPEC oil production to 27 million barrels per day.
	21.	Saudi Light raised to $28 per barrel.
	22.	Saudi Light raised to $34 per barrel.
	23.	First major fighting in Iran-Iraq War.
1981	24.	President Reagan abolishes remaining price and allocation controls.
1982	25.	Spot prices dominate official OPEC prices.
	26.	United States boycotts Libyan crude; OPEC plans 18 million barrel per day output.
	27.	Syria cuts off Iraqi pipeline.
	28.	Libya initiates discounts; non-OPEC output reaches 20 million barrels per day; OPEC output drops to 15 million barrels per day.
1983	29.	OPEC cuts prices by $5 per barrel and agrees to 17.5 million barrel per day output.
1984	30.	Norway, United Kingdom, and Nigeria cut prices.
1985	31.	OPEC accord cuts Saudi Light price to $28 per barrel.
	32.	OPEC output falls to 13.7 million barrels per day.
	33.	Saudis link to spot price and begin to raise output.
	34.	OPEC output reaches 18 million barrels per day.
1986	35.	Wide use of netback pricing.
1987	36.	Wide use of fixed prices.
1988	37.	Wide use of formula pricing.
	38.	OPEC/non-OPEC meeting failure.
	39.	OPEC production accord; Fulmar/Brent production outages in the North Sea.

Table 3-2. World oil price chronology: 1970 to 1997 (cont'd)

Year	Event	
1989	40.	Exxon's Valdez tanker spills 11 million gallons of crude oil.
	41.	OPEC raises production ceiling to 19.5 million barrels per day.
1990	42.	Iraq invades Kuwait.
1991	43.	Operation Desert Storm begins; 17.3 million barrels of Strategic Petroleum Reserve crude oil sales are awarded.
	44.	Persian Gulf war ends.
	45.	Dissolution of Soviet Union; last Kuwait oil fire is extinguished on November 6, 1991.
1992	46.	United Nations sanctions threatened against Libya.
	47.	Saudi Arabia agrees to support OPEC price increase.
	48.	OPEC production reaches 25.3 million barrels per day, the highest in over a decade.
	49.	Kuwait boosts production by 560,000 barrels per day in defiance of OPEC quota.
1994	50.	Nigerian oil workers' strike.
1995/96	51.	Extremely cold weather in the United States and Europe.
1996	52.	United States launches cruise missile attacks into southern Iraq following an Iraq supported invasion of Kurdish safe haven areas in northern Iraq.
	53.	Iraq begins exporting oil under United Nations Security Council Resolution 986.
	54.	Prices rise as Iraq's refusal to allow United Nations weapons inspectors into "sensitive" sites raises.
1997	55.	OPEC raises its production ceiling by 2.5 million barrels per day to 27.5 million barrels per day; first increase in 4 years.
1997	56.	World oil supply increases by 2.25 million barrels per day in 1997, the largest annual increase since 1988.

Table 3-3. Annual rate of change in energy.[1]

Indicator	1969-1974	1974-1981	1981-1987	1987-1995	1969-1995
GOM OCS Crude Sales Volume	2.7	-3.1	3.9	0.2	0.44
GOM OCS Crude Price	11.0	27.8	-9.7	-3.6	1.33
GOM OCS Crude Sales Value	6.5	5.0	-9.9	-5.5	-2.29
GOM OCS Natural Gas Sales Volume	16.0	5.4	-1.6	0.8	5.35
GOM OCS Natural Gas Price	0.0	58.1	-5.5	-4.0	5.01
GOM OCS Natural Gas Sales Value	16.2	85.4	-6.5	-3.5	17.30
US Crude Production	-1.0	-0.3	-0.4	-2.7	-1.13
US Crude Price	13.4	24.2	-10.2	-3.3	1.06
US Natural Gas Price	6.7	40.6	-5.5	-3.6	5.59

[1]Annual rates of change in sales values and prices are based on 1998 constant dollar values which were obtained by deflating with the gross domestic product implicit price deflator.

3.5 OCS Oil and Gas Activities Within the Gulf of Mexico

This section examines oil and gas activities within the GOM. Texas and Louisiana dominate OCS activities. Louisiana is the largest OCS oil and gas producer in the gulf. Texas is the bigger overall oil and gas producer, but Texas OCS production is lower than that for Louisiana. Texas and Louisiana have different patterns of production, but sales value and price closely follow trends in world demand and supply. Alabama only recently began producing offshore oil and gas, and the quantities are small.

3.5.1 Crude Oil and Condensate

Oil from the Gulf of Mexico OCS region is extracted offshore of Louisiana, Texas, and recently, Alabama. Oil and condensate are also produced in the three States from offshore State waters and onshore. The three States, however, vary greatly in the amount of oil and condensate produced. Figure 3-11 shows OCS volume produced by State. The amounts for Alabama are so small that they are not apparent on the figure.

Relative to its total production of crude oil and condensate, Louisiana has had the greatest reliance on Gulf of Mexico OCS oil resources (see Figure 3-12). More than 50 percent of the annual Louisiana oil production has been extracted from the Gulf of Mexico OCS resources since 1977. Moreover, oil producers' reliance on the Gulf of Mexico OCS oil resources has substantially increased since 1975. In 1995, nearly 70 percent of Louisiana's total crude oil was extracted from the Gulf of Mexico OCS resource. Crude oil is also extracted from onshore and State-controlled offshore areas. The onshore production has typically accounted for a large percentage of total crude and condensate production. Production levels, however, have steadily declined since 1975 when total production was 294.7 million barrels; onshore production declined to 107.3 million barrels in 1995. Onshore production has typically accounted for less than 6 percent of Louisiana's total production of crude and condensate.

In 1975, total crude oil production in Louisiana from all sources was 649 million barrels.[1] Production in 1975 was the highest observed for the period 1975 through 1995. In 1995, total Louisiana crude oil production was down to 468 million barrels. Gulf of Mexico OCS production reached a peak level of 340 million barrels in 1986 when production from all sources equaled 521 million barrels.

Louisiana's Gulf of Mexico OCS crude oil production exhibits four distinct patterns over time. From 1954 through 1971, production was increasing at an increasing rate. In 1954, production was 3.3 million barrels. In 1971, production increased to 385.8 million barrels. From 1972 through 1981, production declined from 387.6 million barrels to 255.9 million barrels, or by 34 percent. Production again increased between 1982 and 1986 from 275.5

[1] Data on onshore production begin in 1975.

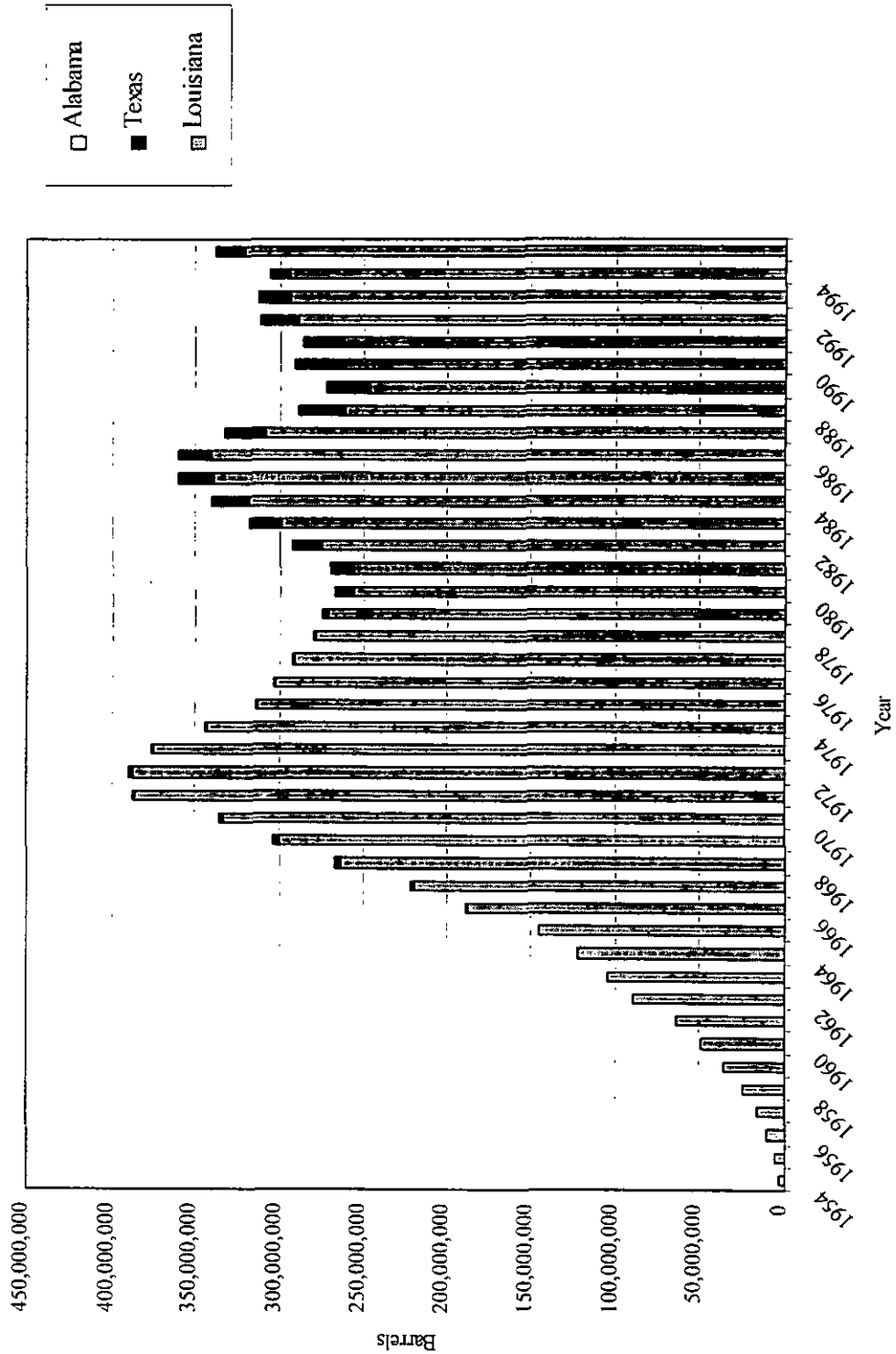

Figure 3-11. Gulf of Mexico OCS crude oil and condensate volume by State, 1954 to 1995.

Source: DOI, MMS, 1998.

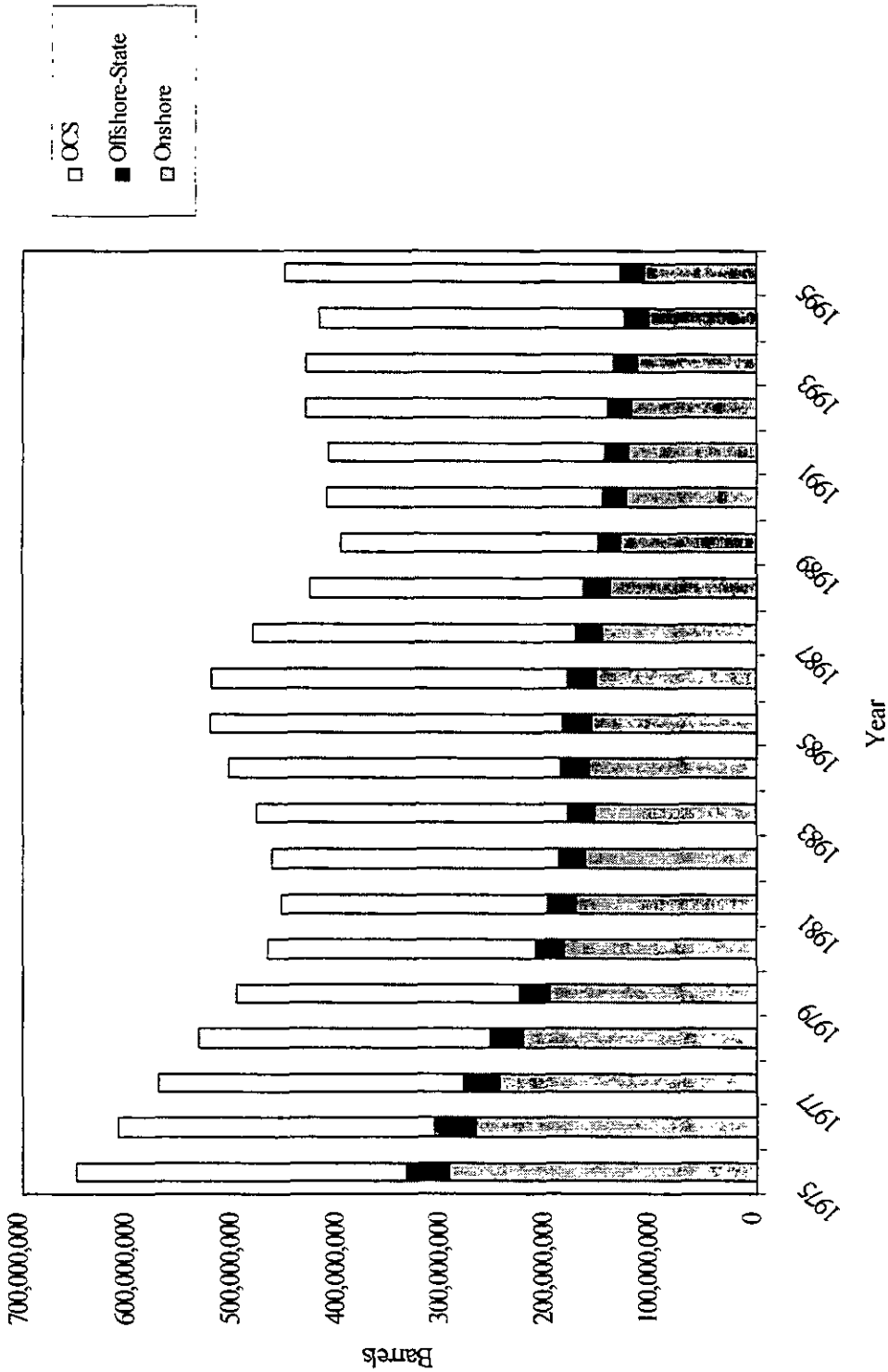

Figure 3-12. Louisiana crude oil and condensate production by source, 1975 to 1995.

Source: DOI, MMS, 1998. Louisiana Department of Natural Resources, 1996.

million barrels in 1982 to 340.3 million barrels in 1986. Between 1986 and 1989, production declined 93.9 million barrels, which represented a decrease of 27.6 percent. OCS production off of Louisiana has generally increased since 1989 from 246.2 million barrels in 1989 to 320.2 million in 1995.

OCS production levels offer only a hint of rapid industrial growth and contraction. First, there was an 18-year span between 1954 and 1971; the growth in that time period is not associated with rapid industrial expansion. In the 6-year period between 1981 and 1986, however, production did increase at an average annual rate of 6.6 percent per year. An annual growth rate of 6.6 percent per year is quite high when considered over the entire 1981 through 1986 period; total expansion in just 6 years equaled 33 percent.

More indicative of rapid industrial expansion and contraction of the oil industry in Louisiana is the sales value of Gulf of Mexico OCS crude oil. The sales volume of Gulf of Mexico OCS oil increased 33 percent between 1981 and 1986, but the sales value or dollar value (in 1998 constant dollars) received by producers of oil and condensate actually declined by 46.4 percent between 1981 and 1986. Between 1980 and 1985, the sales value decreased by 11.1 percent. The sales value of Louisiana Gulf of Mexico OCS crude declined by 40.6 percent between 1985 and 1986. Since 1986, the sales value has remained between about $4.7 and $7.5 billion per year.

The major fluctuations in sales volume and value would be expected to be related to prices received for oil and the cost of extracting oil. Nominal or unadjusted for inflation prices received by Louisiana Gulf of Mexico OCS oil producers have widely varied over time in accordance with national and international policies or events affecting prices, demand, and supplies of oil and gas. Between 1979 and 1981, the wellhead price per barrel (in 1998 constant dollars) of Gulf of Mexico OCS oil and condensate increased from $22.64 to $58.53. By 1986, prices had declined to $23.60 per barrel or by nearly 60 percent relative to 1981 price levels. Between 1988 and 1990, prices increased by 30.4 percent to approximately $26.63 per barrel. In the short interval between 1990 and 1995, prices received by Louisiana producers of Gulf of Mexico OCS oil and condensate declined by 35.8 percent.

Gulf of Mexico OCS production in Texas has been considerably lower than Louisiana Gulf of Mexico OCS production. On the other hand, total oil production in Texas from all sources has historically been higher than total oil production in Louisiana. Dependency on the Gulf of Mexico OCS by Texas producers has ranged from zero to 4.1 percent since 1954 (see Figure 3-13). Gulf of Mexico OCS has accounted on average for 1 percent of the total oil extracted in Texas since 1954. Since 1987, the Gulf of Mexico OCS resource area has contributed at least 3 percent of total Texas production of crude.

In 1954, total crude production in Texas equaled 954 million barrels of oil. OCS production was zero in 1954 and 1955. In 1956, Texas OCS production rose to 13,284 barrels. Not until

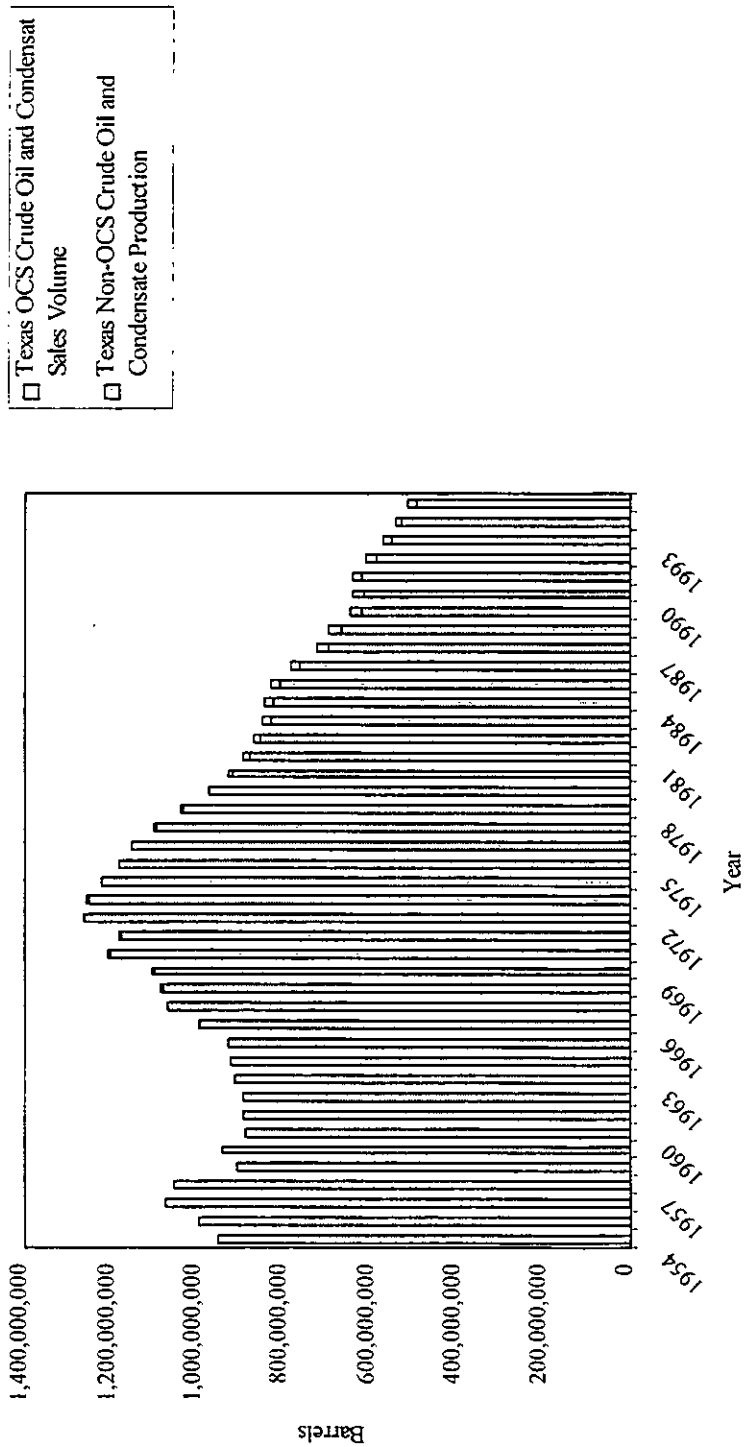

Figure 3-13. Texas OCS and Non-OCS crude oil and condensate production, 1954 to 1995.

Source: DOI, MMS, 1998. Texas Railroad Commission, annual 1954-1996.

1980 did Texas Gulf of Mexico OCS production exceed 10 million barrels a year. In contrast to Louisiana when OCS production increased between 1979 and 1986 and then declined from 1986 through the 1990s, OCS production by Texas producers increased through 1990 and did not substantially decrease until 1993 to 1995.

Total oil production in Texas from all sources has been steadily decreasing since 1972. Between 1972 and 1995, total production of oil in Texas decreased every year except between 1990 and 1991. In 1972, total oil production or extraction in Texas from all sources equaled 2.3 billion barrels; production declined to 512 million barrels in 1995.

OCS production of crude oil off of Texas appears to have seven different temporal patterns. Between 1954 and 1965, OCS production of crude was quite low. In a 3-year period between 1965 and 1968, OCS production of crude and condensate off Texas increased from 3,747 barrels to 3.1 million barrels. After 1968 and through 1978, annual OCS-based production of crude off Texas consistently decreased in each year except between 1971 and 1972. Between 1978 and 1984, Texas OCS production increased at an increasing rate; production levels rose from 2.1 million barrels to nearly 22 million barrels of crude and condensate. OCS crude extracted off Texas declined through 1986. Production increased from 19.8 million barrels in 1986 to 26.4 million barrels in 1990. Texas OCS crude oil production dramatically declined by slightly more than 50 percent between 1990 and 1994.

Since 1972, the production of crude oil in Texas from all sources has steadily declined. At the same time, OCS-based production has generally increased except for two periods -- between 1972 and 1978 and 1990 and 1995. In 1972, production of crude in Texas from non-OCS sources totaled about 1.2 billion barrels. In 1995, production of crude from non-OCS sources was only 512 million barrels. The patterns for Louisiana are similar. Non-OCS production in Louisiana has steadily decreased since 1972 with only minor increases in 1982. Louisiana-based OCS production, however, increased between 1981 and 1986; decreased from 1986 to 1989, and steadily increased between 1989 and 1995.

Similar to the pattern indicating industry expansion in Louisiana, the pattern of the sales value for Texas OCS oil and condensate indicates industry expansion between 1979 and 1985. In 1979, the sales value or revenue received by Texas OCS producers was $88.1 million. In 1985, the sales value had increased by nearly 828 percent to nearly $818 million. In contrast, the sales value of Louisiana OCS increased by 120.5 percent.

3.5.2 Natural Gas

Natural gas from the Gulf of Mexico OCS region is also extracted offshore of Louisiana, Texas, and recently, Alabama and Mississippi (see Figure 3-14). Texas and Louisiana are major producers of natural gas from onshore as well as offshore (both from State and federal waters). Production of natural gas offshore of Alabama began in 1992 for OCS and in 1987

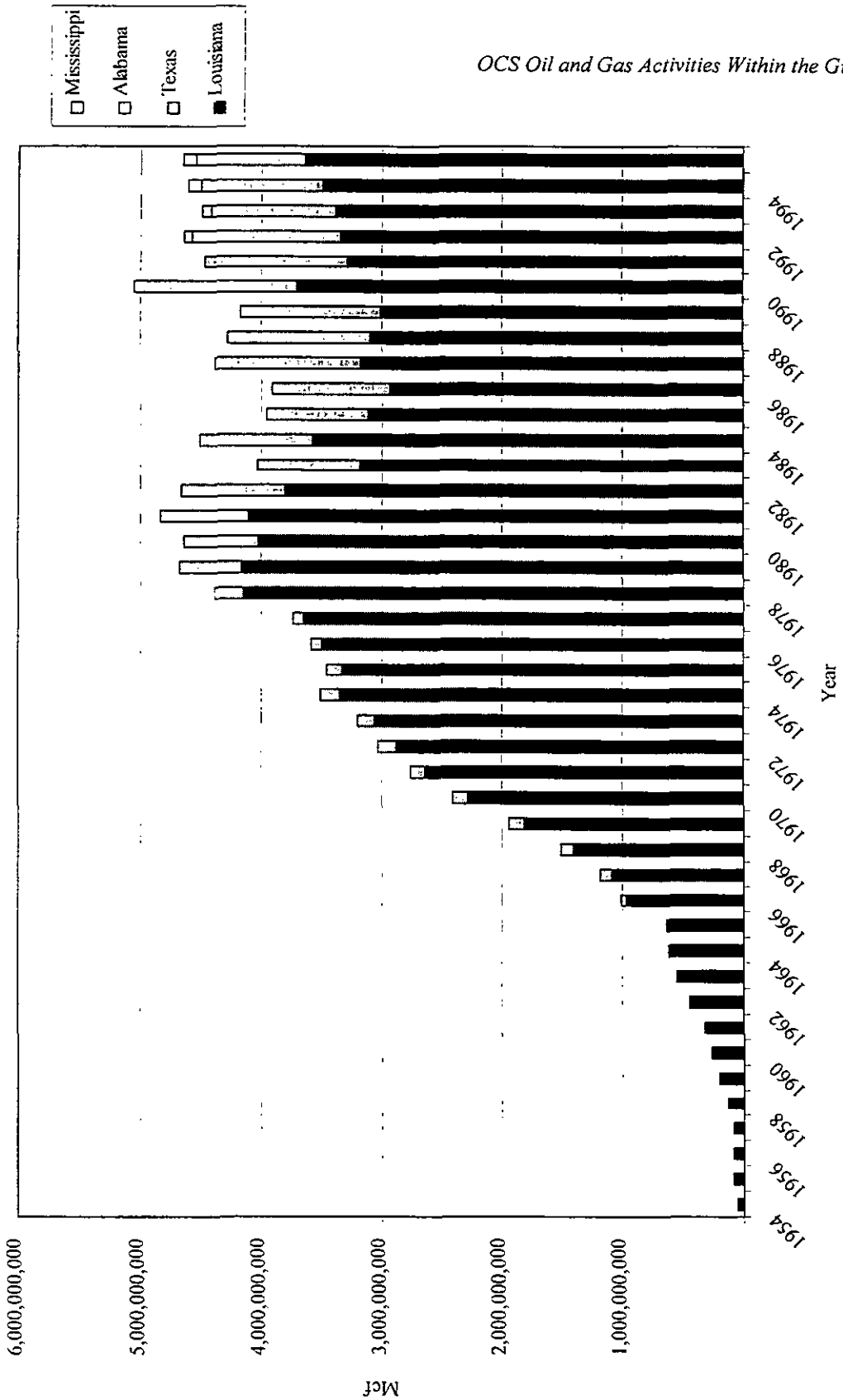

Figure 3-14. Gulf of Mexico OCS natural gas sales volume by state, 1954 to 1995.

Source: DOI, MMS, 1998.

for State waters. Production off of Mississippi occurred in 1994 and 1995, and was so low that it is not readily apparent in Figure 3-14 . Prior to 1986, production of natural gas in Texas and Louisiana annually accounted for more than 60 percent of the total U.S. production of natural gas. In 1960, the share of total U.S. production attributable to Texas and Louisiana was 68.1 percent. Texas' and Louisiana's share of total U.S. production consistently increased between 1960 and 1971; in 1971, the share of total U.S. production by the two States peaked at 75.1 percent. Since 1971, the percentage of total natural gas attributed to production in Louisiana and Texas has steadily decreased. In 1995, the percentage of the total U.S. natural gas production from Texas and Louisiana had declined to 51 percent.

In terms of total production of natural gas from all sources, Texas has historically had the highest production. In the early 1960s, the production of natural gas from Texas was nearly double that of the production in Louisiana, about six times the production level of Oklahoma, and approximately double that for all other States combined. The gap in production between Texas and Louisiana, however, rapidly diminished between 1960 and 1968. In 1968, production in Texas from all sources was only 26 percent higher than production in Louisiana. In 1978, production in Louisiana actually exceeded the total production in Texas by 0.65 trillion cubic feet. From 1979 on, Texas production has annually exceeded the total Louisiana production of natural gas. Both States have exhibited a generally declining pattern in total production since 1980.

Although Texas is the major producing State of natural gas, Louisiana has been the major State relative to OCS production of natural gas. In 1954, Louisiana natural gas producers extracted 0.6 trillion cubic feet; Texas' production equaled zero. In 1995, Louisiana extracted 3.6 trillion cubic feet from the OCS area; Texas extracted 0.9 trillion cubic feet. The patterns of OCS production for the two States are quite similar: (1) both States experienced modestly increasing production; (2) both States had long periods of high growth in OCS production; and (3) both States experienced declines in production over a relatively short period of time. Since 1991, however, Louisiana OCS production has annually increased while OCS production for Texas has steadily decreased.

OCS natural gas production for Louisiana exhibits three to five patterns. Between 1954 and 1965, OCS production modestly increased. From 1965 through 1981, annual OCS production increased by extremely large amounts -- 33.5 percent per year. OCS production generally declined between 1981 and 1986, but did have a small increase in 1984. In 1987, OCS production increased by 5.9 percent. The overall pattern since 1989 has been one of increasing production.

Louisiana also extracts natural gas from onshore and from State waters. See Figure 3-15 for a comparison of Louisiana natural gas production by area. State-controlled offshore production has typically accounted for less than 10 percent of the total production of natural gas in Louisiana. Moreover, the percent of total Louisiana production from State-controlled offshore

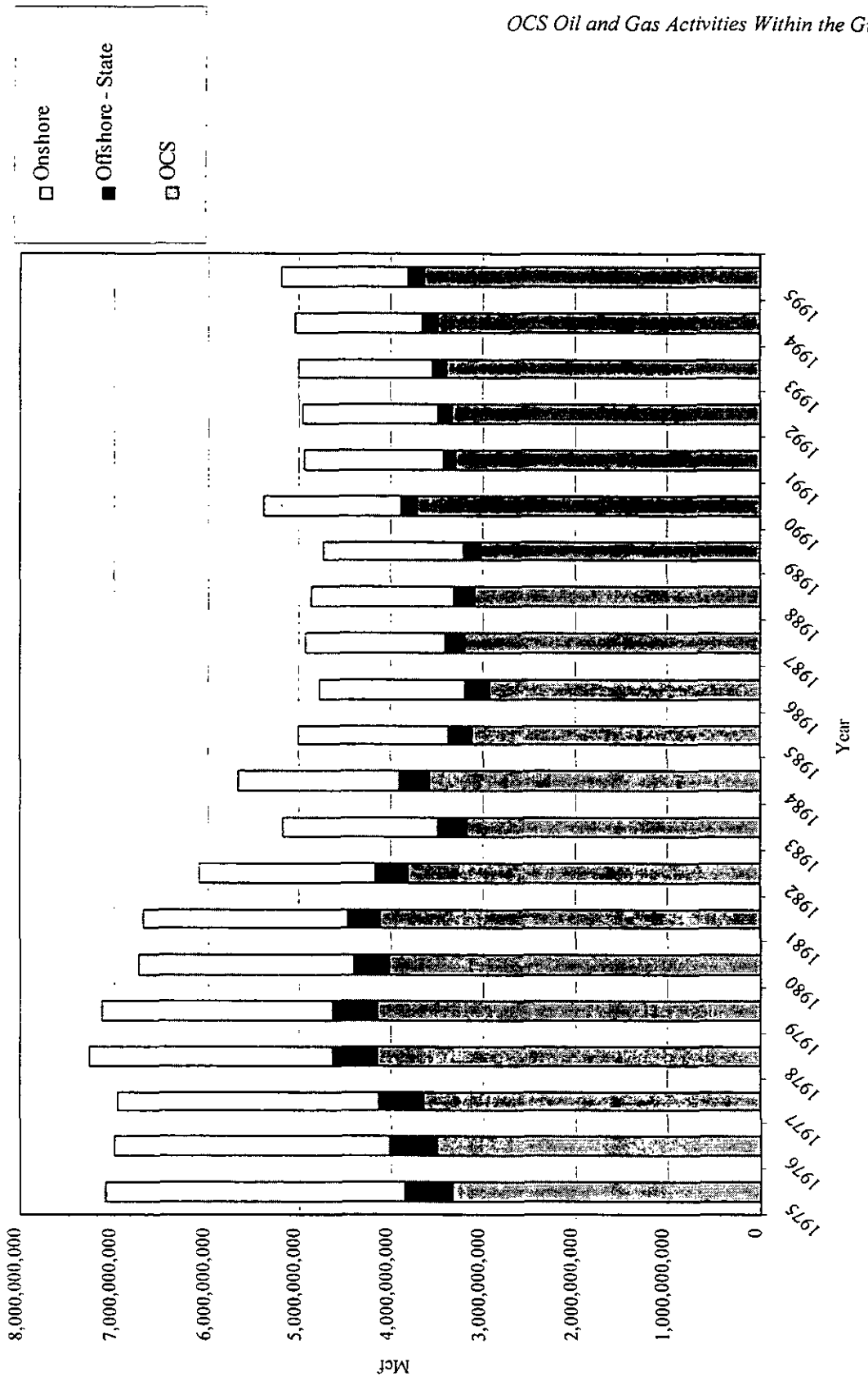

Figure 3-15. Louisiana natural gas production by source, 1975 to 1995.

Source: DOI, MMS, 1998. Louisiana Department of Natural Resources, 1996.

production has declined since 1975, and in 1995, accounted for only about 3 percent of the total production. The share of total production relative to onshore production also decreased between 1975 and 1995. Onshore production, however, is considerably more important in terms of total production than is the State-controlled offshore production. In 1975, onshore production accounted for 46 percent of the total Louisiana production of natural gas. In 1995, onshore production contributed 27 percent to total Louisiana production. OCS production has been a major source of production for Louisiana since at least 1968 when the share of total Louisiana natural gas production attributed to OCS production equaled about 20 percent. Since 1968, the share of the total production of natural gas produced in Louisiana and related to OCS production has steadily increased. In 1995, the OCS share of total Louisiana produced natural gas equaled 70.5 percent.

The pattern for Texas OCS natural gas production has been similar in appearance to that of Louisiana, but the actual pattern and time periods of changes in production are vastly different. There was no production of natural gas from the Texas region until 1957. At that time, Texas extracted only 4.8 million cubic feet. It was not until 1966 that Texas producers again extracted natural gas from the Gulf of Mexico OCS. In 1966, Texas production equaled 42,059 million cubic feet. OCS production steadily increased in each year between 1966 and 1974; during that period, OCS production increased by 280 percent. OCS production levels declined in 1975, 1976, and 1977 relative to 1974 levels. From 1977 through 1987, Texas OCS production generally increased in each year relative to the 1974 level of production. Production nearly tripled between 1977 and 1978. Prior to 1978, annual OCS production by Texas producers was regularly below 150,000 million cubic feet. After 1978, annual OCS production regularly exceeded 500,000 million cubic feet and reached the trillion cubic foot level in 1987. Between 1987 and 1989, Texas OCS production modestly declined, but subsequently peaked in 1990 (1.3 trillion cubic feet). Since 1990, Texas OCS production of natural gas has exhibited a declining pattern (production has declined at an annual rate of 6.5 percent).

The value received for natural gas is equal to the product of the price received and the quantity sold. In 1959, Louisiana OCS producers received $183.3 (in 1998 constant dollars) million; in 1995, they received $6.1 billion -- an increase of 3,228 percent. (In nominal or current dollar value, the sale value increased 132,835 percent).

The dollar value of all Gulf of Mexico OCS gas sold by Louisiana producers greatly increased between 1974 and 1982. Prior to 1974, the sales value of Louisiana OCS natural gas was increasing, and at an increasing rate, but only modestly. During the 1974 to 1982 period, the nominal sales value increased by 1,094 percent; the deflated or constant dollar value of natural gas increased 554 percent. The value decreased between 1982 and 1983 and then largely increased in 1984 relative to 1983. Between 1984 and 1989, the sales value of Louisiana OCS natural gas declined by 42 percent. From 1989 on, the sales value of Louisiana OCS natural gas has widely varied.

The sales value of Gulf of Mexico OCS natural gas (in 1998 constant dollars) for Texas producers exhibits a pattern similar to that for Louisiana. The difference being the pattern exhibited between 1954 and 1975 and 1977. The sales value for Texas OCS natural gas was approximately zero between 1954 and 1965. Between 1966 and 1970, however, the sales value increased from $30.3 million to nearly $77.1 million. From 1970 through 1977, the sales value increased from $77.1 million to $123.7 million. In 1979, the sales value for Texas Gulf of Mexico OCS natural gas broke the billion dollar mark when it reached $1.83 billion. Between 1977 and 1984, the sales value consistently increased in every year; in 1977, the sales value equaled $93 million, and in 1984, the sales value had risen to nearly $4.6 billion. In contrast to Louisiana, the sales value for Texas OCS natural gas did not decline between 1982 and 1983. The downward pattern in sales value for Texas OCS natural gas, however, paralleled the pattern for Louisiana OCS natural gas sales value between 1984 and 1989. The value for Texas OCS natural gas decreased by 40.4 percent --11 percent less than that for Louisiana OCS natural gas. Since 1989, the sales value of Gulf of Mexico OCS natural gas received by Texas producers has widely varied, but with a generally downward pattern. In 1990 and 1993, the sales value increased relative to previous years, but the overall pattern was of decline.

The sales value of natural gas is the product of price received and quantity sold by producers. Decisions about exploration, extraction, and sales are usually based on expectations about prices and costs. To a great extent, price determines the quantity demanded, and when considered by producers relative to costs, will determine the extraction and other related gas activities. The responses of Texas and Louisiana natural gas producers to changes in demand and world prices appear to be quite different. Between 1954 and 1978, Louisiana OCS production of natural gas dramatically increased. At the same time, the world, U.S. and Gulf of Mexico OCS price of natural gas increased, but only at extremely modest levels. Between 1976 and 1980, wellhead prices (in 1998 constant dollars) for natural gas increased by nearly 388 percent, and Louisiana producers of natural gas increased production from the OCS by 15 percent. Texas had no OCS production until 1957 and then not again until 1966. Texas producers simply did not respond to changing world and local prices by exploiting the OCS. Between 1974 and 1984, prices received for Gulf of Mexico OCS natural gas increased in every year. In 1974, the Gulf of Mexico OCS price was $0.73 per 1,000 cubic feet; the price received for Gulf of Mexico OCS natural gas was $0.93 in 1975. By 1979, the Gulf of Mexico OCS price had increased to $2.68 per 1,000 cubic feet. Between 1984 and 1987, Texas production of Gulf of Mexico OCS natural gas substantially increased while the Gulf of Mexico OCS prices also increased, except between 1985 and 1987. After 1987, Texas Gulf of Mexico OCS production does not closely track with Gulf of Mexico OCS prices except for the 1993 to 1995 period.

3.6 Summary

This section has presented a substantial amount of statistical information on oil and gas activities over time and from the regional (Gulf of Mexico) and State perspectives. In considering the impacts of the offshore oil and gas industry on the issues of social and economic changes, landscapes, and work and education, it may be useful to remember the following:

- OCS oil and gas production contributes to total U.S. production and Gulf of Mexico OCS is a substantial proportion of total OCS production. Gulf of Mexico OCS is an important energy resource for the United States.

- Gulf of Mexico OCS crude is produced offshore of Alabama, Louisiana, and Texas, although only small amounts come from Alabama. Gulf of Mexico OCS natural gas is produced offshore of Alabama, Louisiana, Mississippi, and Texas, although only small amounts and only recently has natural gas been produced off of Alabama and Mississippi.

- Louisiana is the largest OCS oil and gas producer in the gulf. OCS accounts for most of its oil and gas production.

- Texas is a bigger overall oil and gas producer than Louisiana, but OCS production in Texas is lower than that for Louisiana. Texas began OCS production later than Louisiana.

- Texas and Louisiana have different patterns of production, but sales value and price closely follow trends in world demand and supply.

- U.S. and Gulf of Mexico OCS prices track well with world oil and natural gas prices. World oil prices respond to world events.

- Most indicators of oil and gas activity (sales volume, price, and sale value) show positive annual rates of change before 1981 and negative rates after 1981, indicating boom and bust periods. However, the boom and bust periods really only show when rate of change from 1969 to 1995 is looked at in subperiods. The overall time period shows positive growth. In other words, the ups and downs of the industry are smoothed out over time.

4.0 Changes in Demographic and Economic Characteristics

4.1 Introduction

The story of changes in characteristics in Gulf of Mexico counties is a story of change in economic activity and structure, of population growth, and of shifts in age distribution, racial composition, and income. The story is one of different, but not necessarily dissimilar, paths from the past to the present. This section focuses on the trends as seen in descriptive statistics of selected variables related to changes in demographics, economic structure, personal economy, and a social indicator in the three study areas -- South Louisiana, Coastal Bend, Tex., and Mobile Bay.

The analysis uses time series data from secondary sources. The analysis focuses on the five study area counties: Lafourche and Terrebonne parishes (South Louisiana); San Patricio County (Coastal Bend, Tex.); and Baldwin and Mobile counties (Mobile Bay). These represent four clusters identified in the cluster analysis (see Section 1 and Appendix A). Lafourche and Terrebonne parishes are in the same cluster.

The variables were selected following a multi-step process that included consideration of variables used in social and economic impact studies (e.g., Laska et al. 1993; Seydlitz et al. 1995b; Gramling and Brabant 1984; Seydlitz and Laska 1994; Craig, 1990; Tolbert 1995; Lamphear et al. 1986; and Stinson 1982). Variable selection included the practical consideration of meeting the legislative requirements of the National Environmental Policy Act of 1969, which requires all agencies of the Federal government to use a systematic, interdisciplinary approach "... in planning and in decision making which may have an impact on man's environment" [Sec 102A)]. This requirement has led to numerous assessments of the impacts of proposed public policy decisions, including offshore oil and gas activities, on affected communities. In addition, the theoretical literature from rural sociology and environmental sociology identifies variables of potential interest, since many studies focus on natural resource management issues and resource-dependent communities (Buttel, 1996; Catton and Dunlap, 1978; Krannich and Zollinger, 1997). Once potential variables were identified consideration was given to data availability, accessibility, and cost. Finally, variables were screened to identify a manageable number covering both social and economic characteristics. This process resulted in the variables of interest. (See Appendix A for a more detailed discussion of the methodology.)

Data sets of the variables of interest were identified or assembled from readily available secondary sources for 11 geographic areas -- the five study area counties, the five Gulf of Mexico States (Alabama, Louisiana, Texas, Florida, and Mississippi), and the United States. Data sets for the five States and the nation were needed to compare trends or changes at the county level to those within their respective States, all States in the gulf area, and the nation. While the study focuses on the period since 1930, very few consistent data are available beginning in 1930 for any of the original variables of interest. Consistent time series data for many variables, particularly economic variables, are not readily available prior to 1969. The

decennial census was a major source of information for the earlier years of interest. The census reflects changes in American life as each census includes requests for new information, combines categories, or otherwise adjusts the information collected to reflect changes in life, work styles, and policy needs. Consequently, the data sets for the variables considered vary greatly in the time period covered.

The variables, units of measure, reason for inclusion, years of available data, and source are summarized in Table 4-1. The data at 5-year intervals from 1970 to 1995 are presented in a summary table for each county. When data for earlier years are available for the variables considered, these are discussed in the text. Summary tables for the five study area States and the nation, as well as other statistics used for this section are included in Appendix B. The annual rate of change for population and seven economic variables by time periods are presented in the text. The time periods shown (1969 to 1974, 1974 to 1981, 1981 to 1987, 1987 to 1995, and 1969 to 1995) were selected based on observed changes in the statistics in those years. Data measured in dollars were collected in current dollars and converted to 1998 dollars using the consumer price index.

An analysis of employment and indicators of Gulf of Mexico OCS oil and gas activities was conducted to detect possible general relationships. Because of problems with developing appropriate composite indicators of Gulf of Mexico oil and gas activities, two basic indicators were used in the analysis: (1) value of product, which reflects prices and quantities of production, and (2) the production level only, which is an indicator used in many previous MMS-funded research projects on Gulf of Mexico oil and gas activities. Total Gulf of Mexico OCS regional values and production, rather than local or community-specific values, were used since offshore production and employment are not tied to particular onshore places (e.g., an individual living in Mobile may work in Terrebonne Parish or on an offshore rig in the Gulf of Mexico).

Using conventional ordinary least-squares models, employment for each of the sectors was regressed on the various Gulf of Mexico OCS oil and gas variables. All equations were linear in variables and parameters (i.e., the conventional linear regression model with no variable transformations). In addition, a trend variable was added to each equation. Serial correlation and conventional statistical problems were examined and corrected when found to exist. Because of possible statistical problems such as multicollinearity, the analysis was limited to a qualitative assessment of the possible interactions between employment and the Gulf of Mexico OCS oil and gas indicators. (See Chapter 5 for a more rigorous and detailed analysis of the possible ramifications of Gulf of Mexico oil and gas activities)

Table 4-1. Summary of variables profiled.

Variable	Unit of Measure	Reason for Selection	Years of Available Data	Source
Demographics				
Population	Total number of persons	Demographic characteristic; impact indicator	1930, 1940, 1950, 1960 1969 to 1995	U.S. Bureau of the Census U.S. Department of Commerce, Bureau of Economic Analysis, Regional Economic Information System
Age Distribution - 0 to 9 - 10 to 19 - 20 to 29 - 30 to 44 - 45 to 59 - 60 +	Number of persons by age category	Demographic characteristic; Indicator of changes community characteristics; tied to work/education issue	1950, 1960, 1970, 1980, 1990	U.S. Bureau of the Census
Race - White - Black	Number of persons by race	Community characteristic	1960, 1970, 1980, 1990	U.S. Bureau of the Census
Educational Attainment - Less than 9th grade - Finished High School - Some College - 4 Year College Degree or Higher	Education level of persons 25 years and older	Community characteristic; indicator of job skills and types of employment likely found; tied to work/ education issue	1970, 1980, and 1980	U.S. Bureau of the Census

Table 4-1. Summary of variables profiled (cont'd).

Variable	Unit of Measure	Reason for Selection	Years of Available Data	Source
Industry Structure				
Employment - Total - Agriculture and Ag. Services - Mining - Manufacturing - Military (employment only)	Number of full and part time employees	Indicator of overall economic conditions and shifts in economic structure Ag.: Historically important sector (combines farm and ag. services) Mining: Includes oil industry Manufacturing: Historically important sector and potential ties to oil industry activities Military: Tied to community histories in Mobile Bay and Coastal Bend, Texas study areas	1969 to 1995	U.S. Department of Commerce, Bureau of Economic Analysis, Regional Economic Information System
Earnings by place of work - Total - Agriculture and Ag. Services - Mining - Manufacturing	$1998	See employment	1969 to 1995	U.S. Department of Commerce, Bureau of Economic Analysis, Regional Economic Information System

Table 4-1. Summary of variables profiled (cont'd).

Variable	Unit of Measure	Reason for Selection	Years of Available Data	Source
Establishments - Total - Agriculture - Mining - Manufacturing	Number	See employment	1977 to 1995	U.S. Department of Commerce, Bureau of the Census, County Business Patterns
Personal Economy				
Mean Household Income - Total - White - Black	$1998	Indicator of economic conditions for all households and by race and shifts from changes in economic structure	1970, 1980, and 1990	U.S. Bureau of the Census
Per Capita Income	$1998 per person	Indicator of economic conditions per person	1969 to 1995	U.S. Department of Commerce, Bureau of Economic Analysis, Regional Economic Information System
Average Wage Per Job	$1998	Indicator of shifts in employment structure; economic characteristic	1969 to 1995	U.S. Department of Commerce, Bureau of Economic Analysis, Regional Economic Information System
Social Indicator				
Suicide Rate	Suicides per 100,000 population	Example of a social problem associated with development impacts	Generally 1969 to 1996	National Center for Health Statistics

4.2 The Economic Setting

It is difficult to evaluate economic development in the Gulf Coast region and in the study States and localities in particular, without giving close attention to Federal policy over the past 60 years. And, it would be equally difficult to plan for future economic development of these areas without close monitoring of changes in Federal legislation and national political priorities. Sorting through the complexity of causes of change that accompany implementation of Federal policy is difficult. When the story of the five study area counties or parishes begins in 1930, the United States was already an urban nation. The decade before, more Americans lived in cities than on farms and in rural areas. The South, however, remained an agricultural region and in 1930, agriculture still provided the major source of employment in four out of five study area counties or parishes (Mobile County, home to the Port of Mobile, was the exception.)

Beginning in the 1930's, the Federal government played a significant role in changing the economic and physical landscape of the South, including the five study areas. The Agricultural Adjustment Act (AAA) stabilized the South's lagging farm economy by taking millions of acres out of staple crop production, establishing price supports, and paying land owners for the acreage removed from staple cultivation. The legislation had the intended effect of pumping millions of dollars into a struggling agricultural economy and the unintended consequence of throwing tens of thousands of sharecroppers and tenants off the land in the midst of an economic depression as some land owners refused to share Federal payments with croppers and tenants. The Roosevelt Administration recognized some of these problems and attempted to address them through experimental programs designed to keep small farmers on the land. One such effort, the "Terrebonne Project" in Schriever, La. sought to establish a communal farm, but it failed primarily because of acreage and crop limitations imposed by the AAA.

The departure of farm labor, as a result of Federal agricultural policy, the depression, the manpower requirements of World War II, the desire to leave the south, and other reasons, encouraged land owners to mechanize. Farm subsidies provided the capital. International Harvester introduced a one-row cotton picker in 1941. By 1960, 50 percent of the South's cotton crop was harvested mechanically, and that year International Harvester introduced a two-row, enclosed-cab cotton harvester (Daniel, 1985 and Kirby, 1987).

Machines worked best on large plots of land; the pattern of small landholdings characteristic of the South during the early twentieth century gave way to larger holdings after World War II. Investments in machinery required investments in land which, in turn, demanded more and better machinery. Small landholders and croppers and tenants were generally closed out of the postwar agricultural boom in the South, and smaller operators were eventually forced to sell to larger holders, some of whom were agribusiness concerns. Although agriculture is no longer a key economic driver in the study areas, the sequence of Federal legislation and global

forces (such as depression and war) triggering technological change, consolidation, and the filtering out of small operators and laborers characterized not only agriculture from the 1930's to the 1950's, but industries such as petrochemicals, shipping, and commercial fishing.

This process, heavily impacted by Federal agricultural policy and World War II, is evident in the study States and areas. In Alabama, average farm size increased from 68.2 acres in 1930 to 98.8 acres by 1954. Baldwin County experienced an even greater change, moving from 73.7 acres average farm size in 1930 to 145.0 acres in 1954. Mobile County, where agriculture was not a major economic force, maintained relatively small farms reflecting more their proximity to the city of Mobile than the impact of agricultural policy. Thus, average farm size shifted from 75.8 acres in 1930 to 91.4 acres in 1954.

Louisiana exhibited a similar pattern, moving from 57.9 acres per farm in 1930 to 103.0 acres in 1954, with Lafourche Parish experiencing an increase from 186.7 in 1930 to 313.6 in 1954. Terrebonne was anomalous to the Southwide pattern with 203.9 acres per farm in 1930 and 160.3 acres in 1954, reflecting perhaps changes in crop cultivation.

Texas also experienced an increase in average farm size, expanding from 251.7 acres in 1930 to 402.1 acres in 1954. San Patricio County, similarly, grew from 226.3 acres in 1930 to 487.8 acres in 1954.

The expansion of Southern farms reflected mechanization and a decline of tenancy and sharecropping. Figures for farm labor show the dramatic decline of tenants and sharecroppers. In Alabama tenants comprised a significant (64.7 percent) portion of all farmers in 1930; by 1954, however, that figure had almost halved to 34.8 percent. In Baldwin County, the percentage dropped from 17.8 percent in 1930 to 5.6 percent in 1954. In Mobile, 17.9 percent of farmers were tenants or sharecroppers in 1930 compared with 5.8 percent in 1954.

Two-thirds of Louisiana's farmers were sharecroppers or tenants in 1930 (66.6 percent), but in 1954, that figure had declined to 34.1 percent. Lafourche did not experience a significant decline, moving from 32.9 percent in 1930 to 28.7 percent in 1954, but Terrebonne cut its tenant and sharecrop population down to 12.8 percent in 1954 from a high of 27.0 percent in 1930.

The decline in sharecropping and tenantry was most dramatic in Texas, reflecting the greater urbanization and economic diversification of that State. In 1930, 60.9 percent of the State's farmers labored as tenants or sharecroppers; by 1954, that figure had declined to 25.9 percent. San Patricio County did not experience such a major shift in labor tenure, moving from 69.4 percent in 1930 to 47.3 percent in 1954 (U.S. DOC, BOC, 1930; and 1954).

The sharp decline in tenancy fueled the defense plants during World War II as well as the Second Great Migration to Northern cities after the war. Between 1940 and 1945, approximately one-quarter of the South's farm population -- about 4 million people -- left the land. From Panama City, Fla., to Pascagoula, Miss., and on to Orange, Tex., heretofore small towns were suddenly inundated by new people and new economic activities. Most of these places could not cope with the burdens, and even larger places, such as Mobile and Norfolk, struggled unsuccessfully to accommodate the demographic wave. The tradition of weak local government and minimal social services hampered efforts to help new arrivals with basic services and housing (Daniel, 1985; Goldfield, 1982; Kuehn Loftin, 1971).

The interaction of Federal legislation and policy and technology is evident in other sectors of the Southern economy during and after World War II, especially in the military sector, a sector that had significant implications for industrial development in the study States, particularly Texas. An estimated 1.25 million troops trained at the State's 15 army posts during the war. Clear skies and wide-open spaces encouraged the building of 40 air bases, including the Corpus Christi Naval Air Station (Calvert and De Leon, 1990), as did the longevity of Southern senators acting on behalf of their districts.

The influx of Federal funds, technology, and manpower primed the petrochemical industry in the Gulf Coastal region. In 1947, John Gunther reported that the "region between Houston and Beaumont seems, in fact, to be a single throbbing factory." Houston served as the nucleus of a petrochemical complex that stretched along the Gulf Coast from Corpus Christi to Lake Charles, Louisiana. Fueled by Federal investment, Texas and Louisiana experienced the greatest relative gain in manufacturing capital expansions in the nation during World War II. (Gunther, 1947 and Schulman, 1991).

Nor did Federal largesse end with the war. Under the Armed Services Procurement Act of 1947 and the Defense Production Act of 1950, the Gulf Coast region received favored treatment in the disbursement of defense contracts. The former act enabled the Pentagon to forgo bidding in order to assist depressed areas, while the latter encouraged the geographic dispersal of defense operations for strategic and economic reasons. The South, as the nation's "Number One economic problem," fulfilled the first criterion, and the dominance of Southern Democrats in Washington ensured compliance with the second standard. By the early 1960's, Texas, for example, dominated the military aircraft industry. As one observer noted, it was difficult to distinguish between what was "new in Texas and what's new in air power." (Quoted in Schulman, 1991).

Given Texas's dominance in the aircraft industry, it was not surprising that, by this time, the State emerged as a leader in the new space industry. The National Aeronautics and Space Administration (NASA), following Federal policy on dispersal of military facilities away from the East and West coasts, announced its decision in 1961 to construct the Manned Spacecraft Center (now the Johnson Space Center) in Houston. The decision triggered a

multiplier effect of development as 29 space-related companies set up shop in the Houston area within the year (Schulman, 1991). The recent success of Ingleside, Texas in landing the minesweeper port builds on the legacy of Gulf Coast Texas as a national defense center.

Another military presence in the gulf region, the U.S. Army Corps of Engineers, actually predated the New Deal and World War II initiatives. The Corps' pre-1930's work on the Houston Ship Channel and the Mississippi River contributed to the economic development of those areas. In 1956, the Corps, acting on a directive from Congress, built the Mississippi River-Gulf Outlet (MRGO) which cut 40 miles off the trip from New Orleans to the gulf and expanded the capacity of the Crescent City's port (Hirsch, 1993). The Corps has also aided the burgeoning tourist/leisure industry along the Gulf Coast from its beach erosion programs to the construction of the Intercoastal Waterway, a significant factor in the emergence of Gulf Shores, Ala., as an upscale beachfront community.

The tourist/leisure industry, in fact, has received assistance from a variety of Federal programs, but few more important than the U.S. Defense Highway Act of 1956 which initiated the interstate highway system and made the Gulf Coast region more accessible not only to those within the Gulf Coast States, but to tourists beyond the region. More recent Federal legislation has supported the recreational interests of fishing enthusiasts at the expense of commercial fishing. In the late 1980's, Federal regulations required shrimpers to use turtle excluder devices (TEDS) to protect sea turtles. In 1990, the Federal government extended TEDS to include red snapper and other finfish caught and killed in shrimp trawls (Margavio and Forsyth, 1996).

Federal fisheries legislation underscored the double-edged sword of government presence in local economic development. The impact of Federal legislation since the 1930's, while undeniably a boon to most of the Gulf Coast region, has had differential consequences. The Agricultural Adjustment Act provided an early example of the ambiguous impact of a generally-positive piece of Federal legislation. Even the generosity of the military establishment has had its drawbacks, such as subjecting communities to military policies and priority shifts. The closure of Brookley Field Air Base in Mobile in 1969 jolted that community. The Hill-Burton Act of 1946 provided a significant boost to the South's health care system providing Federal funding for the construction of hospitals. Birmingham benefited from these outlays to become the South's premier medical center smoothing the city's transition from a dying steel industry. Mobile, on the other hand, struggled to adjust to the changes in the national economy as Hill-Burton funds concentrated in Birmingham. Federal banking regulations in the early 1990's severely (and most would say, necessarily) curtailed the aggressive lending practices of financial institutions in parts of the South, a factor in communities' responses to boom-bust industries such as oil and natural gas, and to real estate developers in the tourist/leisure industry. The Coastal Barrier Resources Act (COBRA) of 1982 affects the ability to obtain flood insurance on certain undeveloped barrier islands. Federal regulations with respect to licensing, working conditions, and worker safety

influences OCS costs and the quality and quantity of the labor pool. As stated at the beginning of this section, it is difficult to discuss economic development in the Gulf Coast region and in the study States and localities in particular, without close attention to Federal policy over the past 60 years. And, it is equally difficult to plan for the future economic development of these areas without close monitoring of trends in Federal legislation and national political priorities.

While the Federal government's economic policies have had a major impact on the South's economy, it did not and does not follow that social changes have kept pace. Boosting local and regional economies remained the primary objective of such legislation. Consequently, traditional patterns of racial and class distinctions with respect to education, type of work, income, housing, and health persist in many areas of the South, including the three study States. And, these traditional patterns limit the type and extent of economic development occurring in the region.

Great social changes did happen. The South, like many geographic regions of the United States, has moved from an agriculture-based to a service-based economy. Many more employment options and better educational opportunities exist today for minorities than in 1930 or even 1960. Moreover, minority political power, both African American and Hispanic, ensures that many of these advances will remain in place. And, it may be that Hispanic upward mobility will take hold in Coastal Bend Texas as Hispanic political power increases.

Political power is a key to economic success. Southern lawmakers' influence over Federal policy since the New Deal era has accomplished considerable economic growth in the region. At the local level, though, minorities rarely participated in the benefits derived from these policies until after the passage of the 1964 Civil Rights Act and the 1965 Voting Rights Act. Though economic success has not paralleled the degree of political access, there have been improvements for minorities, especially in the more urbanized States of the South such as Texas, Virginia, North Carolina, Georgia, and Florida.

Racial restrictions in the South have not died easily. Federal legislation has helped considerably, but comments from field work interviews conducted in this study indicate that prejudicial white attitudes toward blacks and Hispanics not only exist, but are expressed openly. Black out-migration from the Mobile area to the North after World War II, the increasing segregation of Mobile's school system and residential areas in subsequent decades, and white flight attest to the power of traditional racial perceptions in south Alabama. The relatively low socioeconomic status of African- Americans in the sub-region reflects not only low-wage employment and low educational attainment, but persisting historical burdens. Similar historical burdens, though with Hispanics rather than African-Americans, exist in Texas.

Changes in the economic base may not result in social transformation. Also, traditional social patterns limit the types of economic activities available to these areas. Despite the presence of upscale Gulf Shores, for example, Baldwin County, Ala., remains in the lower tier of the State's counties with respect to per capita wages. Trading a low-wage industrial economy for a low-wage service economy reflects economic change, but not necessarily social or economic development.

If the history of the past 30 years in the South is any indication, both blacks and Hispanics will be more agents than victims of change. The growing political power of both groups, especially of Hispanics, is one indication of agency. Another is the growing environmental consciousness and activism among African-Americans.

In addition, there is growing environmentalism among more affluent recreational and residential migrants to certain parts of the Gulf Coast. There is a general awareness, for example, of how two major oil spills in Galveston Bay adversely affected the tourist industry of that city. This awareness may affect future economic development, especially industrial or extractive enterprises that are viewed as generators of pollution. Opposition may take the form of open challenges to new and existing enterprises, union activism, and out-migration. These activities have consequences for the size and nature of the future labor pool, the introduction of technology, and the costs of doing business.

Historically, "selling the South" has been a primary strategy of economic development. The South has been the place where entrepreneurs from around the nation and the world can shop cheaply. As recently as the late 1980's, Louisiana established a commission to recruit labor-intensive industries. Kevin Reilly, a prominent Baton Rouge business leader, lamented the State's traditional perspective on economic development "where everyone was happy so long as they had a job at a refinery and a pickup truck with two shotguns in the back window." (Quoted in Falk and Lyson, 1988).

The emergence of high-technology firms and other primary-sector economic activities has resulted in the migration of highly skilled, highly educated individuals into the South more than providing jobs for home-grown talent, though that latter segment is growing. These firms are centered overwhelmingly in the region's major metropolitan areas -- Dallas, Houston, Birmingham, Atlanta, Charlotte, Nashville, Tampa/St. Petersburg, Orlando, and Miami. And even here, many of the high-technology, retail, and service positions are disproportionately low-skill, poorly paying jobs with less security and possibilities for advancement than industrial work. Also, "urban" is not necessarily a synonym for Sun Belt prosperity as the cases of New Orleans and Mobile attest, though these areas are better off than the rural regions which surround them. In the rural South, workers have been especially vulnerable to external forces and most likely to lose jobs overseas.

Industrial employment is the most susceptible to flight, but the services jobs that sometimes replace industry merely represent a change of employment rather than a change in fortune. The persistent geographic and social profiles of the South's economy, especially outside selected metropolitan areas, has led two observers to conclude, "The product in the [Southern] marketplace has been the same all along: Tradition" (Falk and Lyson, 1988).

The five study areas reflect the significant economic changes that have come over the South since the New Deal era of the 1930's and others noted above. Keep in mind, however, that the economic transformations did not significantly alter historic patterns of work, education, race, and gender.

Agriculture was important to all but Mobile County of the five study area counties at the beginning of the period of interest. It was the major source of employment in all but Mobile County in 1940, the earliest year for which this information is available (see Table 4-2). Until 1950, land in farms in the five counties was still on the increase in all but Terrebonne Parish. Except for San Patricio County, acreage in farms in the five study area counties has declined since the early 1950's, although the period of decline differs by county (see Figure 4-1).

Table 4-2 indicates the top three major sources of employment by county at 10-year intervals from 1940 to 1970 and at 5-year intervals for 1970 to 1995. From 1940 through 1970, the major sources of employment in Mobile County set the county apart from the other study area counties. Since 1970, services, manufacturing, government, and retail trade have been major employment sources in all five counties. Lafourche and Terrebonne parishes differ from the others and from each other in that mining was important in Terrebonne parish from 1950 to 1960 and again in 1975 to 1985. Transportation and utilities were important in Lafourche Parish in 1970 and again in 1980 and 1985. Mining and transportation and utilities were only major sources of employment in those two parishes.

Major sources of earnings are available beginning in 1970. Table 4-3 shows the three major sources of earnings for the five study area counties at 5-year intervals from 1970 to 1995. Manufacturing, services, government, and retail trade have been major sources of earnings in these counties. Again, Lafourche and Terrebonne parishes differ somewhat from the others and from each other. Mining is a major source of earnings in only Terrebonne Parish. Transportation and utilities has only been a major source of earnings in Lafourche Parish.

Over time the characteristics of the five study area counties changed. The following sections described these changes for selected variables.

Table 4-2. Major sources of employment.

Year	Lafourche Parish	Terrebonne Parish	San Patricio County	Baldwin County	Mobile County
1940	Agriculture Retail/Wholesale Trade Manufacturing	Agriculture Retail/Wholesale Trade Manufacturing	Agriculture Retail/Wholesale Trade Manufacturing	Agriculture Manufacturing Retail/Wholesale Trade	Manufacturing Retail/Wholesale Trade Transportation
1950	Agriculture Retail/Wholesale Trade Manufacturing	Retail/Wholesale Trade Agriculture Mining	Agriculture Retail/Wholesale Trade Construction	Agriculture Retail/Wholesale Trade Manufacturing	Retail/Wholesale Trade Manufacturing Transportation
1960	Retail/Wholesale Trade Mining Manufacturing	Mining Retail/Wholesale Trade Manufacturing	Agriculture Retail/Wholesale Trade Manufacturing	Manufacturing Retail/Wholesale Trade Agriculture	Retail/Wholesale Trade Manufacturing Construction/ Transportation (tied)
1970	Government Services Retail Trade	Services Retail Trade Government	Services Manufacturing Retail Trade	Services Manufacturing Retail Trade	Services Manufacturing Retail Trade
1975	Government Services Retail Trade	Mining Retail Trade Services	Services/Government Construction Retail Trade	Services Manufacturing Retail Trade	Services Manufacturing Government
1980	ServicesGovernment (tied) Transportation and Utilities Retail Trade	Mining Retail Trade Services	Services Government Retail Trade	Services Retail Trade Government/ Manufacturing	Services Government Retail Trade
1985	Services/ Government (tied) Retail Trade Transportation and Utilities	Retail Trade Services Mining	Services Retail Trade Government	Services Retail Trade Government	Services Retail Trade Government
1990	Services Government Retail Trade	Services Retail Trade Government	Services Government Retail Trade	Services Retail Trade Government	Services Retail Trade Government
1995	Services Government Retail Trade	Services Retail Trade Government	Government Services Retail Trade	Services Retail Trade Government	Services Retail Trade Government

Source: LSU, 1996 and U.S. DOC, BEA, REIS, 1998.

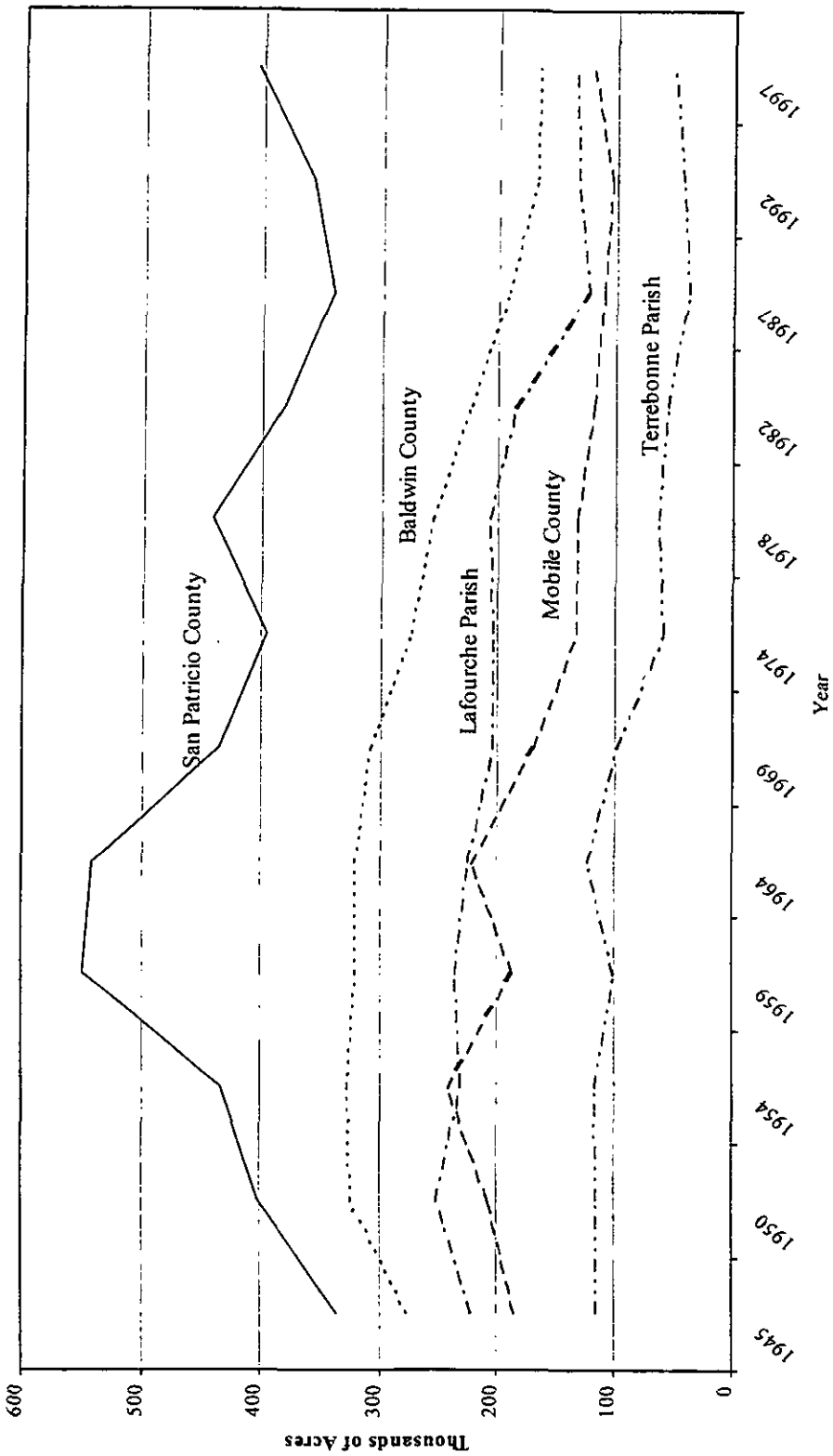

Figure 4-1. Acreage of farm land in five county study area, 1945 to 1997.

Source: LSU, 1996 and U.S. DOC, BOC, 1992 and 1997.

Table 4-3. Major sources of earnings.

Year	Lafourche Parish	Terrebonne Parish	San Patrico County	Baldwin County	Mobile County
1970	Government Transportation and Utilities Manufacturing/ Retail Trade (tie)	Mining Services Retail Trade	Manufacturing Government Services	Manufacturing Services Government	Manufacturing Services Government
1975	Manufacturing Government Transportation and Utilities	Mining Services Retail Trade	Construction Mannufacturing Government	Manufacturing Services Government	Manufacturing Services Government
1980	Transportation and Utilities Manufacturing Services	Mining Services Retail Trade	Manufacturing Construction Government	Manufacturing Government Services	Manufacturing Services Government
1985	Government Transportation and Utilities Services	Mining Services Retail Trade	Government Manufacturing Construction	Manufacturing Services Government	Manufacturing Services Government
1990	Services Government Transportation and Utilities	Services Mining Retail Trade	Manufacturing Government Services	Services Manufacturing Government	Services Manufacturing Government
1995	Government Services Transportation and Utilities	Services Mining Retail Trade	Government Manufacturing Services	Services Government Retail Trade	Services Manufacturing Government

Source: U.S. DOC, BEA, REIS, 1998.

4.3 South Louisiana

The South Louisiana study area includes Lafourche and Terrebonne parishes. Offshore oil and gas has been part of their industry mix since the early days of the industry. The first offshore area developed was off of Louisiana as was the first Federal lease sale. Terrebonne Parish is the larger of the two counties in terms of geographic area, population, earnings, and employment. Lafourche Parish has a larger proportion of land devoted to farming. Tables 4-4 and 4-5 summarize selected variables at 5-year intervals from 1970 to 1995 for Lafourche and Terrebonne parishes, respectively. Tables 4-6 and 4-7 show the annual rate of change for a subset of variables for five time periods between 1969 and 1995.

4.3.1 Changes in Demographics

Population. Population changes in Lafourche and Terrebonne parishes at 10-year intervals from 1930 to 1990 and for 1995 are shown in Figure 4-2. In 1930, Terrebonne's population was about 29,800 compared with the population of Lafourche Parish of about 32,400. By 1950, Terrebonne had the larger population and remains the larger parish in terms of population. In 1995, there were an estimated 100,650 residents in Terrebonne Parish compared with 87,350 in Lafourche Parish. Population in Lafourche Parish peaked in the mid-1980's at about 88,600. This was followed by a 3.3 percent decline in population until about 1990. Population rose again from 1991 to 1995 but did not reach the peak experienced in 1983 through 1986. Population in Terrebonne Parish peaked in 1983 at about 101,200. Except for a slight increase in population in 1985 and 1986, population decreased in Terrebonne Parish from the mid-1980's to 1990, and then rose again between 1991 and 1995. The peaks and declines in population in the two parishes track well with the changes in the offshore industry. Annual rates of change were higher between 1969 and 1974 and again between 1974 and 1981 than between 1981 and 1987 and 1987 and 1995.

Age distribution. The age distributions for Lafourche and Terrebonne parishes at 10-year intervals from 1950 to 1990 are shown in Figures 4-3 and 4-4 respectively. Age distribution has shifted in both counties since 1950 from a high proportion of children to a high proportion of persons 60 years and older. The average annual rate of change between 1969 and 1995 was highest in both parishes for those 60 years and older, 5.7 percent in Lafourche Parish and 6.2 percent in Terrebonne Parish. Both parishes experienced a negative annual rate of change between 1980 and 1990 for those age 10 to 19 and 20 to 29 years. The proportion of the population age 20 to 59, often considered working age population, increased after 1960, but has been similar in both parishes. It accounted for about 53 percent of the population in both parishes in 1990.

Race. The majority of the population in both Lafourche and Terrebonne parishes is white, although the proportion of white population in both parishes declined between 1960 and 1990 -- from 87.8 percent to 84.3 percent in Lafourche Parish and from 79.5 percent to 77.4 percent

Table 4-4. Summary of selected variables: Lafourche Parish.

Variable	1970	1975	1980	1985	1990	1995
Changes in Demographics						
Total Population	69,233	74,331	83,334	88,615	85,788	87,348
Age						
0-9	16,703	NA	13,721	NA	14,471	NA
10-19	15,064	NA	18,169	NA	14,221	NA
20-29	10,481	NA	15,824	NA	14,946	NA
30-44	11,615	NA	15,096	NA	19,282	NA
45-59	9,037	NA	11,008	NA	11,814	NA
60+	6,041	NA	8,665	NA	11,126	NA
Race						
White	61,125	NA	71,973	NA	72,669	NA
Black	7,716	NA	9,205	NA	10,602	NA
Changes in Industry Structure						
Total Employment	21,923	25,817	32,902	32,130	31,496	35,357
Agricultural Services	2,362	2,035	2,091	1,781	2,190	2,120
Mining	1,659	1,778	1,728	1,960	1,269	815
Manufacturing	2,022	3,158	3,624	2,193	2,530	3,004
Military	426	383	366	485	552	529
Number of Wage/Salary Jobs	17,994	21,478	27,469	25,407	24,184	27,391
Total Earnings (thousands of $1998)	$ 554,034	$ 722,330	$ 898,302	$ 776,054	$ 710,930	$ 779,307
Agricultural Services	$ 50,635	$ 57,342	$ 28,683	$ 15,199	$ 18,627	$ 21,045
Mining	$ 68,592	$ 83,030	$ 78,381	$ 85,988	$ 59,455	$ 47,723
Manufacturing	$ 65,723	$ 109,430	$ 138,909	$ 72,050	$ 82,473	$ 94,945
Total Establishments	NA	NA	1,644	1,769	1,598	1,673
Agricultural Services	NA	NA	48	43	31	22
Mining	NA	NA	41	38	19	23
Manufacturing	NA	NA	51	57	55	59
Changes in Personal Economy						
Total Mean Household Income ($1998)	$ 36,667	NA	$ 45,485	NA	$ 33,707	NA
White Mean Household Income	$ 38,116	NA	$ 45,579	NA	$ 35,993	NA
Black Mean Household Income	$ 22,304	NA	$ 26,848	NA	$ 17,407	NA
Per Capita Income ($1998)	$ 11,786	$ 14,933	$ 18,263	$ 16,623	$ 16,080	$ 17,613
Average Wage Per Job ($1998)	$ 23,534	$ 25,209	$ 26,057	$ 23,635	$ 22,764	$ 21,702
Changes in a Social Indicator						
Suicide Rate per 100,000 Population	14.4	9.4	0	5.6	11.7	9.1

NA - Not Available

Source: See Table 4-1.

Table 4-5. Summary of selected variables: Terrebonne Parish.

Variable	1970	1975	1980	1985	1990	1995
Changes in Demographics						
Total Population	76,212	84,759	94,983	101,054	97,048	100,645
Age						
0-9	19,179	NA	17,849	NA	18,001	NA
10-19	17,109	NA	19,964	NA	16,735	NA
20-29	10,481	NA	15,824	NA	14,946	NA
30-44	11,615	NA	15,096	NA	19,282	NA
45-59	9,037	NA	11,008	NA	11,814	NA
60+	6,041	NA	8,665	NA	11,126	NA
Race						
White	62,518	NA	76,192	NA	75,376	NA
Black	11,423	NA	14,596	NA	15,878	NA
Changes in Industry Structure						
Total Employment	28,490	36,818	51,391	47,142	43,712	47,313
Agricultural Services	1,428	1,416	1,417	1,414	2,018	1,857
Mining	4,251	6,155	9,238	7,433	4,524	4,713
Manufacturing	3,085	4,203	4,760	3,145	2,691	3,096
Military	522	499	415	554	615	626
Number of Wage/Salary Jobs	24,954	32,249	45,681	41,194	37,706	41,575
Total Earnings (thousands of $1998)	819,655	1,139,494	1,762,259	1,448,047	1,167,969	1,260,621
Agricultural Services	31,580	31,718	28,085	20,032	18,934	17,540
Mining	189,651	286,897	475,326	374,767	208,234	222,094
Manufacturing	92,929	144,585	218,091	109,858	88,662	106,193
Total Establishments	NA	NA	2,121	2,507	2,251	2,467
Agricultural Services	NA	NA	23	21	25	40
Mining	NA	NA	88	122	88	83
Manufacturing	NA	NA	104	114	122	122
Changes in Personal Economy						
Total Mean Household Income ($1998)	$ 38,150	NA	$ 46,481	NA	$ 35,618	NA
White Mean Household Income	$ 40,918	NA	$ 49,695	NA	$ 38,994	NA
Black Mean Household Income	$ 22,408	NA	$ 29,368	NA	$ 19,690	NA
Per Capita Income ($1998)	$ 12,210	$ 14,639	$ 18,913	$ 17,374	$ 16,380	$ 17,758
Average Wage Per Job ($1998)	$ 27,210	$ 29,121	$ 32,395	$ 29,010	$ 25,640	$ 25,517
Changes in a Social Indicator						
Suicide Rate per 100,000 Population	6.6	8.3	0	11.9	20.6	15.8

NA - Not Available

Source: See Table 4-1.

Table 4-6. Annual rate of change, Lafourche Parish.

Variable	1969-1974	1974-1981	1981-1987	1987-1995	1969-1995
Population	1.4	2.7	0.1	0.0	1.08
Personal Income	7.1	7.1	-3.3	2.3	3.6
Per Capita Personal Income ($1998)	5.4	3.7	-3.4	2.3	2.0
Total Full and Part-Time Employment	2.8	4.9	-1.7	1.9	2.2
Earnings by Place of Work ($1998)	6.6	3.8	-4.7	2.2	1.6
Average Earnings per Job ($1998)	3.3	-0.7	-3.4	0.2	-0.4
Mining Employment	2.1	1.3	-6.2	-4.7	-2.0
Wages and Salary per Job ($1998)	0.9	1.2	-2.3	-0.5	-0.2

Source: Calculated based on U.S. DOC, BEA, REIS, 1998.

Table 4-7. Annual rate of change, Terrebonne Parish.

Variable	1969-1974	1974-1981	1981-1987	1987-1995	1969-1995
Population	1.8	2.7	0.1	0.4	1.3
Personal Income ($1998)	6.5	9.2	-3.8	2.6	4.0
Per Capita Personal Income ($1998)	4.3	5.5	-3.9	2.2	2.0
Total Full and Part-Time Employment	4.8	8.5	-4.3	2.3	2.8
Earnings by Place of Work ($1998)	7.6	10.9	-6.8	1.7	2.5
Average Earnings per Job ($1998)	2.2	1.5	-3.3	-0.5	-0.2
Mining Employment	7.5	10.3	-7.7	-1.1	0.6
Wages and Salary per Job ($1998)	1.8	2.1	-3.2	-0.6	-0.1

Source: Calculated based on U.S. DOC, BEA, REIS, 1998.

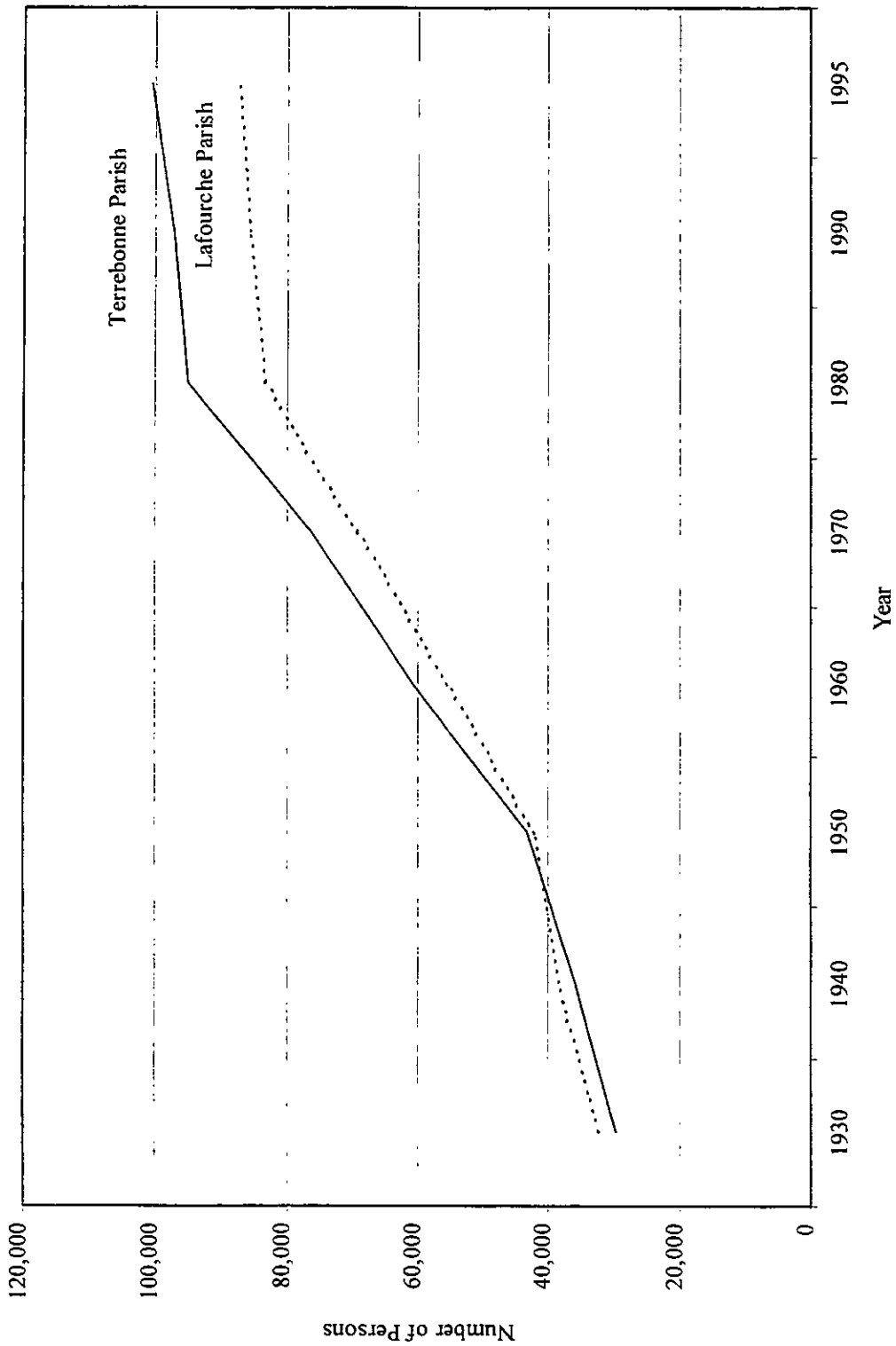

Figure 4-2. Population of Lafourche and Terrebonne parishes, 1930 to 1995.

Source: LSU, 1996 and U.S. DOC, BEA, REIS, 1998.

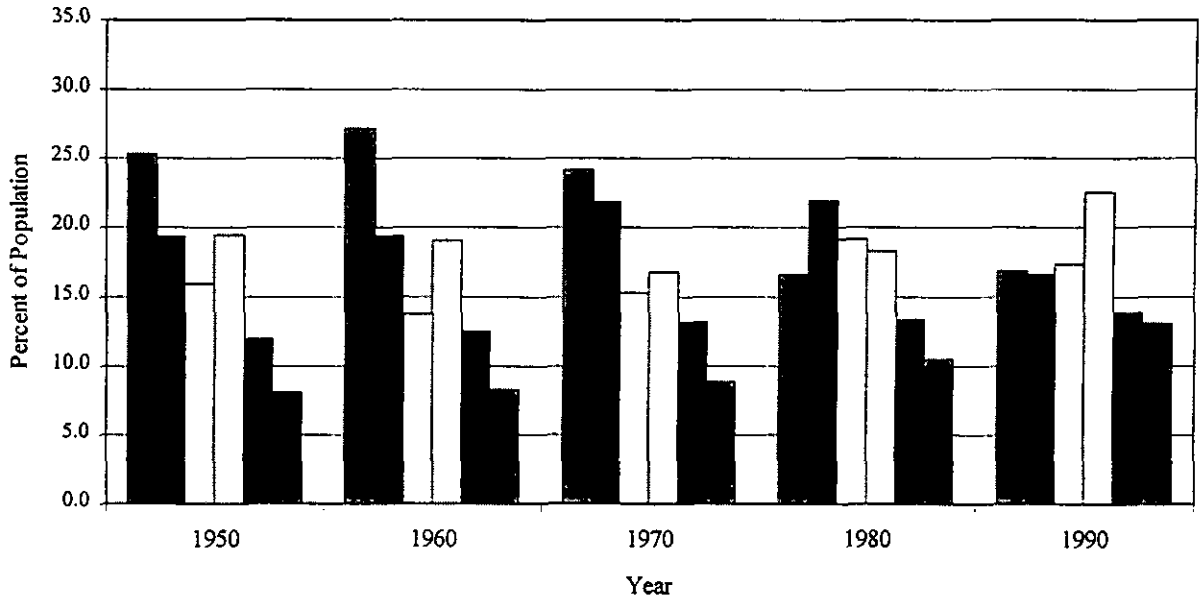

Figure 4-3. Age structure, Lafourche Parish, 1950 to 1990.

Source: LSU, 1996.

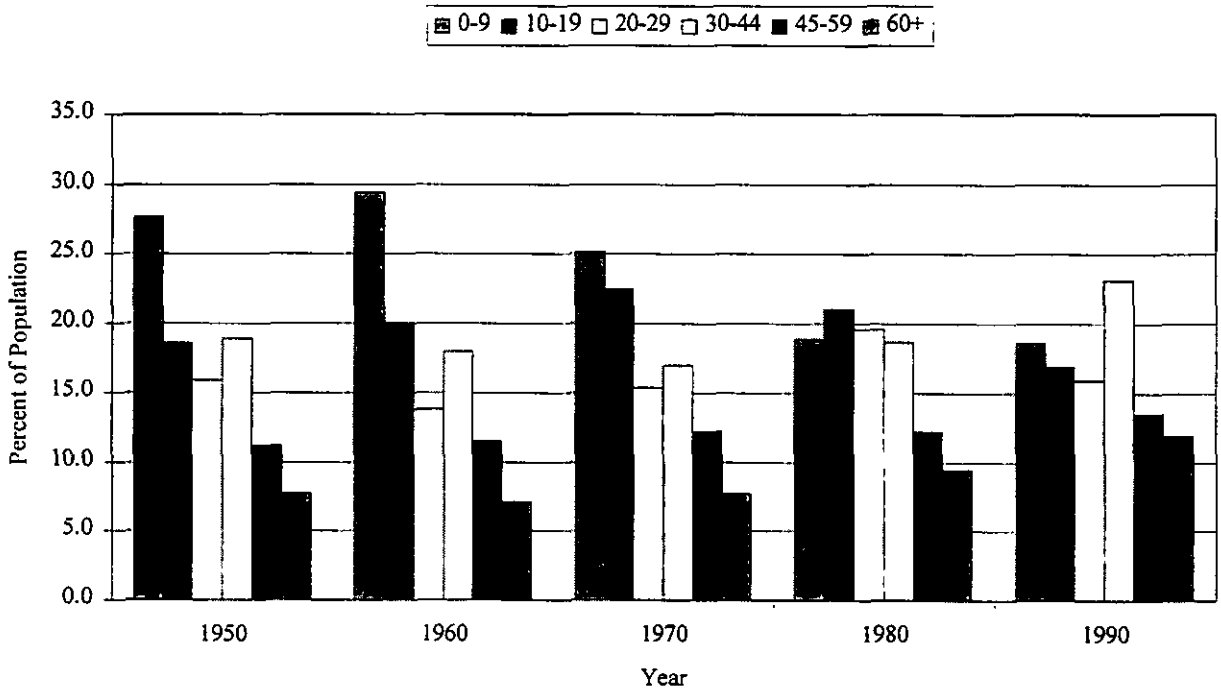

Figure 4-4. Age structure, Terrebonne Parish, 1950 to 1990.

Source: LSU, 1996.

in Terrebonne Parish. The proportion of the population which is black remained about the same in 1970 and 1980 and increased slightly in 1990. Terrebonne Parish has consistently had a larger proportion of black population than Lafourche Parish -- 16.5 percent in Terrebonne Parish compared to 12.5 percent in Lafourche Parish in 1990. The two parishes are much closer to each other in terms of the proportion white and black population than they are to the State, which has consistently had a much lower proportion of white residents and a higher proportion of black residents than the two parishes. The change in racial composition also suggests an increase in Asian and Hispanic residents.

Education attainment. Like the State and the nation, the populations of the two parishes have become better educated over time (see Tables 4-8 and 4-9). As is discussed in Chapter 7, access to education, a prerequisite for educational attainment as measured by number of years of formal schooling completed, has improved over time for some segments of the population. In general, Terrebonne Parish has had the more educated population, particularly since 1950. The proportion of the population age 25 and older in both parishes who have an eighth grade education or less has decreased since 1940 while the proportion finishing high school and completing some college has increased. The proportion of those finishing a 4-year college degree program or higher increased between 1970 and 1980, but remained about the same in both parishes in 1990 (between 9 and 10 percent). In spite of the increases in educational attainment achieved in the two parishes, about 27 percent of the 1990 population in Lafourche Parish age 25 years and older and 22 percent in Terrebonne Parish had less than a nineth grade education. This compares with about 15 percent for Louisiana and 11 percent for the nation. The relatively poor educational attainment in both parishes, even when compared with a State that has consistently ranked near or at the bottom in that category, has implications for the offshore oil industry. The work requires greater occupational skills. Vocational educational programs, as discussed in Chapter 7, may fill some of the education gap, but the relatively low levels of education restrict the employment options of residents and limit the attractiveness of the area for firms that might employ more highly skilled labor.

4.3.2 Changes in Industry Structure

Employment, earnings, and establishments in sectors of interest. Employment and earnings (by place of work) in the three sectors of interest, agriculture and agricultural services, mining, and manufacturing as well as total employment and earnings, for the two counties from 1969 to 1995 are shown in Figures 4-5 to 4-8. Total employment in Lafourche Parish increased from about 22,350 in 1969 to 35,350 in 1995, an increase of 58.2 percent. In comparison, employment during the same period rose 51.1 percent in Louisiana and 64.1 percent in the United States. Growth in Lafourche Parish employment was not steady. Employment grew between 1971 and peaked initially at 34,100 in 1981. This was followed by a 9.3 percent decline in employment between 1981 and 1983, a slight increases in 1984 and 1985, followed by a 5.2 percent decline between 1985 and 1989. It should be noted that total employment in 1985 was about equal to what it had been in 1980. Employment increased

Table 4-8. Educational attainment, Lafourche Parish, 1940 to 1990.

	1940		1950		1960		1970		1980		1990	
	No.	%	No.	%	No.	%	No.	%	No.	%	No.	%
Persons 25 and older	16,854		19,525		25,765		31,221		41,623		49,724	
Finished 8th grade or less	13,871	82.3	15,400	78.9	17,762	68.9	16,862	54.0	16,098	38.7	13,393	26.9
Finished high school	963	5.7	1,185	6.1	3,245	12.6	6,471	20.7	11,620	27.9	16,588	33.4
Some college	404	2.4	520	2.7	912	3.5	1,534	4.9	3,521	8.5	6,372	12.8
4 year college degree or higher	336	2.0	440	2.3	1,078	4.2	1,778	5.7	4,034	9.7	4,977	10.0

Source: LSU, 1996.

Table 4-9. Educational attainment, Terrebonne Parish, 1940 to 1990.

	1940		1950		1960		1970		1980		1990	
	No.	%	No.	%	No.	%	No.	%	No.	%	No.	%
Persons 25 and older	15,733		19,725		26,479		33,600		46,849		55,636	
Finished 8th grade or less	12,344	78.5	14,695	74.5	16,413	62.0	15,698	46.7	14,411	30.8	12,260	22.0
Finished high school	857	5.4	1,435	7.3	4,092	15.5	7,994	23.8	15,259	32.6	19,412	34.9
Some college	408	2.6	585	3.0	1,102	4.2	2,040	6.1	4,835	10.3	8,530	15.3
4 year college degree or higher	357	2.3	495	2.5	1,136	4.3	1,924	5.7	4,570	9.8	5,243	9.4

Source: LSU, 1996.

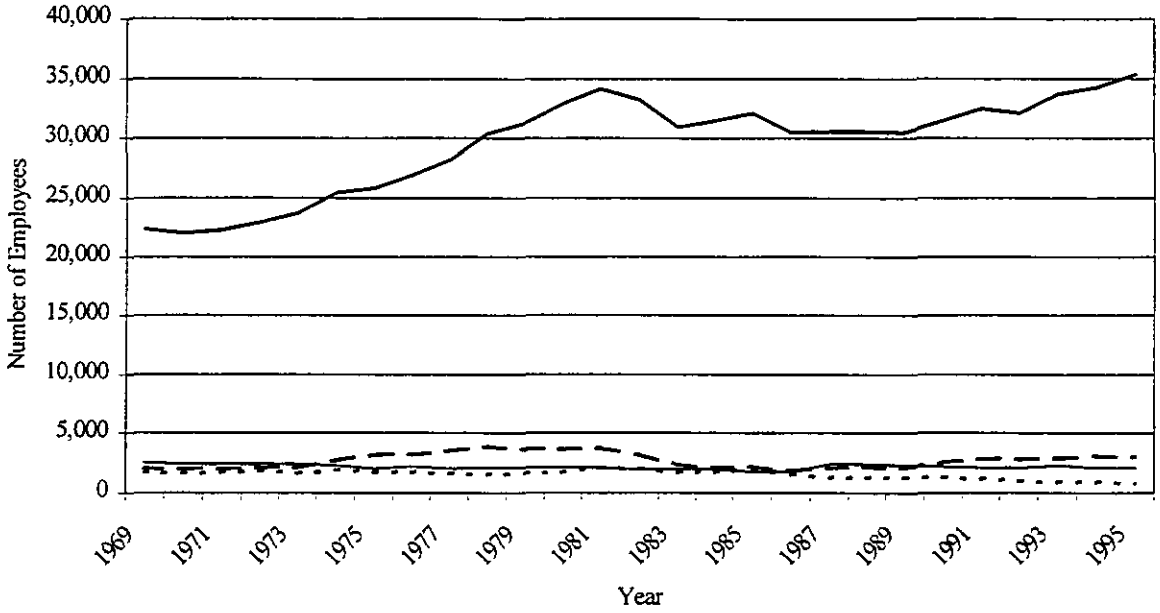

Figure 4-5. Employment in selected industries, Lafourche Parish, 1969 to 1995.

Source: U.S. DOC, BEA, REIS, 1998.

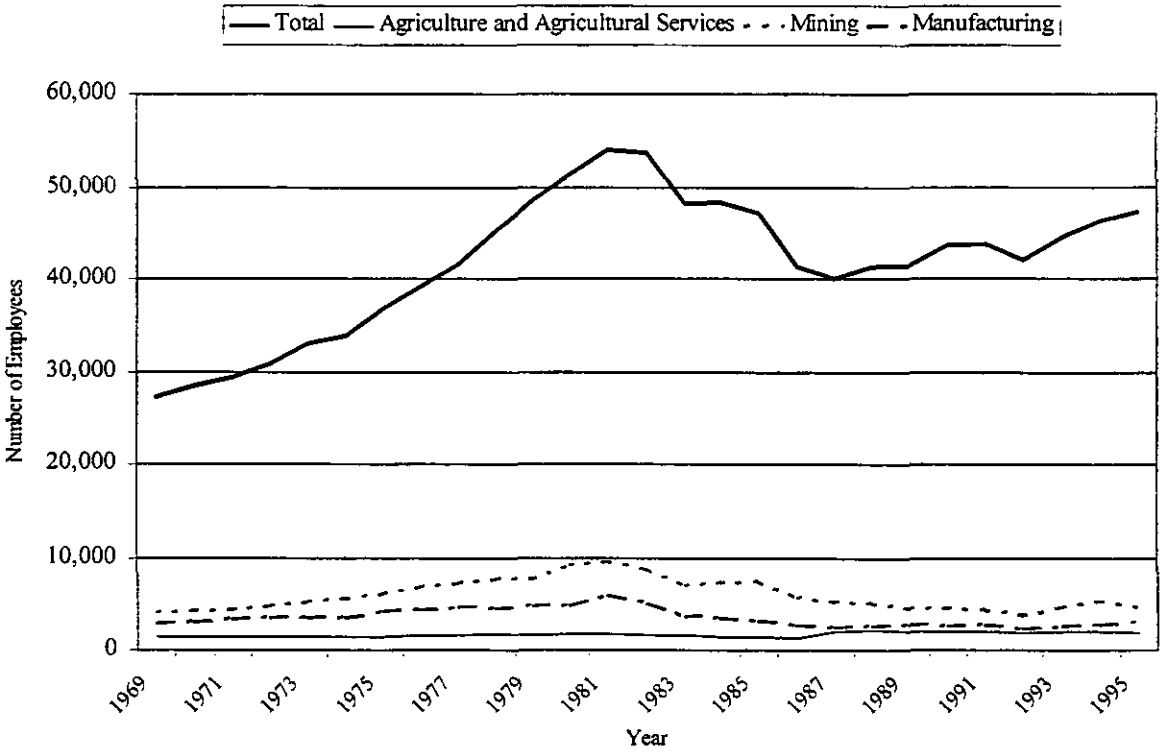

Figure 4-6. Employment in selected industries, Terrebonne Parish, 1969 to 1995.

Source: U.S. DOC, BEA, REIS, 1998.

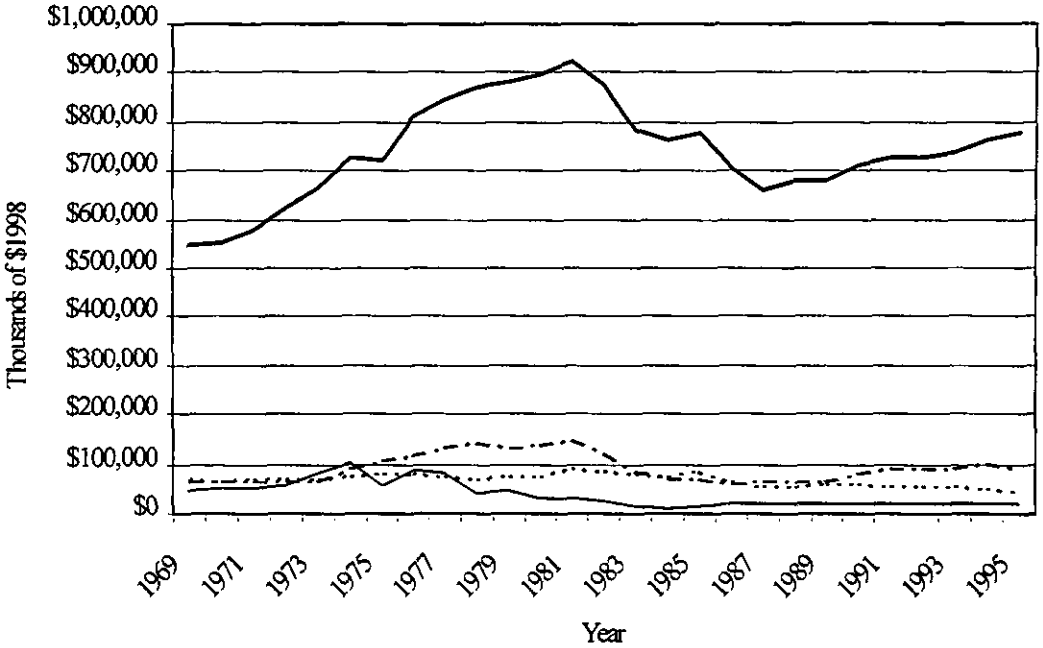

Figure 4-7. Earnings in selected industries, Lafourche Parish, 1969 to 1995.

Source: U.S. DOC, BEA, REIS, 1998.

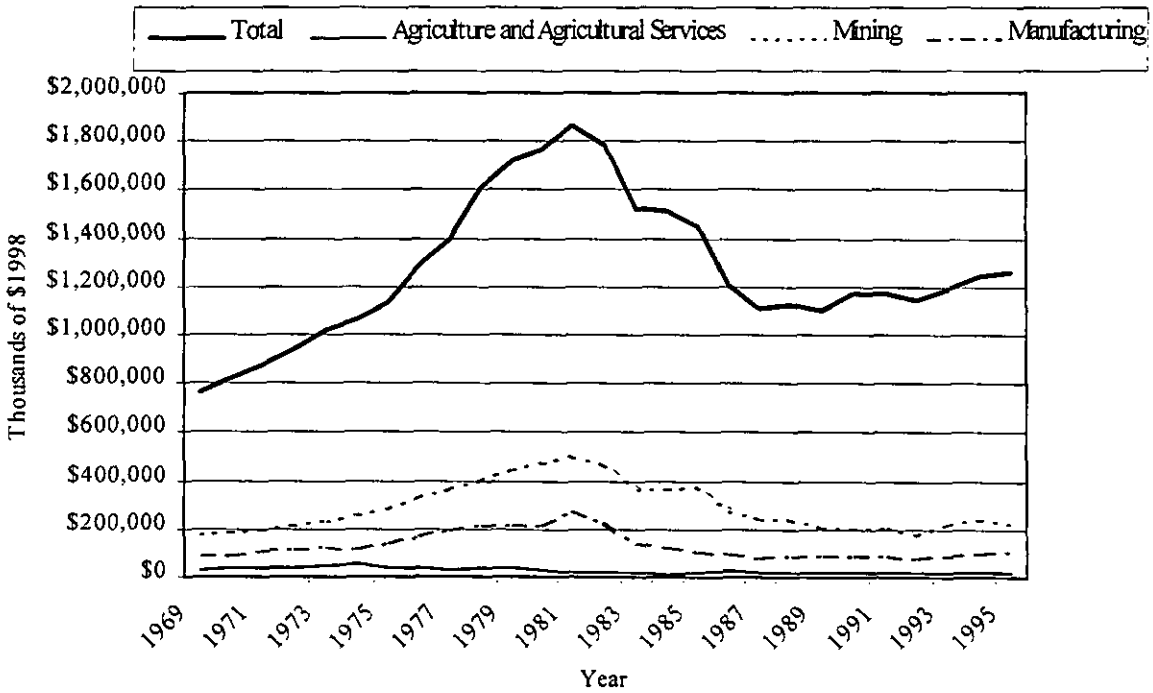

Figure 4-8. Earnings in selected industries, Terrebonne Parish, 1969 to 1995.

Source: U.S. DOC, BEA, REIS, 1998.

again between 1990 and 1995, and reached peak employment levels again in 1994 and 1995. The changes in employment follow closely with the stages of the offshore oil and gas industry. The highest annual rate of change in employment (4.9 percent per year) occurred between 1974 and 1981. This was followed by negative growth between 1981 and 1987. It should be noted that local statistics are more volatile than national statistics.

Total earnings in Lafourche Parish increased 42.5 percent (to $779 million) between 1969 and 1995. Like employment, earnings peaked in 1981, then declined until 1987 (about 40 percent) and then increased until 1995. The period of decline in earnings tracks with the decline experienced in the offshore oil industry. Earnings in 1987 were about what they had been in 1973. Earnings in 1995 did not match the peak year of 1981. The highest annual rate of change in earnings (6.6 percent per year) occurred between 1969 and 1974.

Total employment and total earnings in Terrebonne Parish grew more rapidly, from 27,250 in 1969 to 47,300 in 1995 (or 73.5 percent) for total employment and from $767 million in 1969 to $1,261 million in 1995 (or 64.4 percent) for total earnings. Growth in employment and earnings in Terrebonne, was, therefore, greater than in Lafourche Parish and Louisiana during the same period. Employment growth in Terrebonne Parish was greater than in the United States, but growth in earnings was less than that for the nation during the same period. Peak employment (54,000) was reached in 1981. Like Lafourche Parish, Terrebonne Parish experienced a decline in employment in the 1980's. The decline, from 1982 to 1987, tracks the downturn of offshore oil industry in the 1980's. Earnings also peaked in 1981 and then declined until 1987. Earnings in 1987 were about what they had been in 1973. The highest annual rate of change in employment (8.5 percent per year) and earnings (10.9 percent per year) occurred between 1974 and 1981.

In spite of negative growth in employment and earnings in both parishes between 1981 and 1987, both experienced overall positive growth rates between 1965 and 1995. The period of decline in earnings tracks the decline experienced in the offshore oil industry. The annual average rate of change in employment between 1969 and 1995 was very similar for Lafourche Parish (2.2 percent), Terrebonne Parish (2.8 percent), Louisiana (2.0 percent), and the nation 2.5 percent). The rate of change for earnings in the same time period showed Lafourche Parish (1.6 percent) to be slower than Terrebonne Parish (2.5 percent), the State (2.2 percent), and the nation (2.5 percent).

Agriculture and agricultural services have not been major sources of employment in either parish since the 1950's. Lafourche Parish has more land in farms and farms than Terrebonne Parish, and agricultural employment was higher in Lafourche Parish between 1969 and 1995. Earnings were higher in Lafourche Parish, except in 1985 and 1990, when they were higher in Terrebonne Parish. Earnings from agriculture and agriculture services peaked in 1975 in both parishes.

Mining employment and earnings have been more important in the South Louisiana study area than in the other study areas. They have also been more important in Terrebonne Parish than in Lafourche Parish. In both parishes mining employment and earnings increased and decreased several times from 1969 to 1995. Mining employment in Terrebonne peaked at about 9,600 in 1981 and, at the time, accounted for 17.8 percent of total employment. Mining employment also peaked in Lafourche Parish in 1981 at about 2,100, or 6.1 percent of total employment. The peak coincided with the thriving stage of the offshore oil industry. Peak OCS oil and condensate production off Louisiana occurred between 1984 and 1987; peak sales value occurred between 1981 and 1985; and peak OCS natural gas production occurred between 1979 and 1984. Mining employment in Terrebonne Parish, along with the industry as a whole, sustained a downturn from 1986 to 1992. In 1995 Terrebonne Parish had about 650 more mining workers than it had in 1969. In contrast, in Lafourche Parish mining employment declined steadily after 1986 and there were about half the workers in mining in 1995 as in 1969. Table 4-10 summarizes mining employment in both parishes from 1969 to 1995. (See Tables 4-6 and 4-7 for annual rates of change in mining employment during five time periods from 1965 to 1995.)

Total earnings and mining earnings both peaked in Lafourche Parish in 1981, during the thriving period of the offshore oil industry. At the time, mining earnings ($923.7 million) accounted for about 9.8 percent of total earnings in the parish. All mining earnings at the time came from oil and gas extraction. Mining earnings in Terrebonne Parish also peaked in 1981 at $1,864 million and accounted for 26.8 percent of total earnings at the time.

Manufacturing employment in both parishes increased from 1969 to the late 1970's in Lafourche Parish and from 1969 to 1981 in Terrebonne Parish. Both parishes experienced a decline in manufacturing employment in the early to mid-1980's, which coincided with the early portion of the decline in the offshore oil industry. Although manufacturing employment in Lafourche Parish generally increased between 1986 and 1995, it had not again reached its peak employment level of 3,600 by 1995. In Terrebonne Parish, manufacturing employment fluctuated between 1986 and 1995. It did not sustain periods of growth or decline for more than 3 years. In 1995, manufacturing employment was about 51.5 percent of the 1981 peak (6,000).

Total establishments in both parishes peaked in 1985. Lafourche Parish experienced a negative rate of change in agriculture and agricultural services, mining, and manufacturing establishments between 1977 and 1995. Terrebonne Parish experienced a slight positive rate of change in each of the three sectors and for total establishments.

Major sources of employment and earnings. The major sources of employment in Lafourche and Terrebonne parishes were similar in the early and more recent time periods of interest, but were somewhat different in the 1975 to 1985 period. Agriculture, retail/wholesale, and manufacturing were the major sources of employment in the early period. Mining was a

Table 4-10. Mining employment, Lafourche and Terrebonne parishes, 1969 to 1995.

	Lafourche Parish		Terrebonne Parish	
Year	Number	% of Total	Number	% of Total
1969	1,735	7.8	4,059	14.9
1970	1,659	7.6	4,251	14.9
1971	1,724	7.7	4,332	14.8
1972	1,802	7.9	4,785	15.5
1973	1,691	7.1	5,239	15.9
1974	1,914	7.5	5,586	16.5
1975	1,778	6.9	6,155	16.7
1976	1,750	6.5	6,876	17.6
1977	1,637	5.8	7,283	17.5
1978	1,591	5.2	7,724	17.1
1979	1,655	5.3	7,700	15.8
1980	1,728	5.3	9,238	18.0
1981	2,084	6.1	9,600	17.8
1982	2,016	6.1	8,791	16.3
1983	1,706	5.5	6,990	14.5
1984	1,716	5.5	7,360	15.2
1985	1,960	6.1	7,433	15.8
1986	1,562	5.1	5,655	13.7
1987	1,309	4.3	5,188	13.0
1988	1,325	4.3	5,111	12.4
1989	1,280	4.2	4,507	10.9
1990	1,269	4.0	4,524	10.3
1991	1,230	3.8	4,376	10.0
1992	983	3.1	3,749	8.9
1993	876	2.6	4,652	10.5
1994	888	2.6	5,414	11.7
1995	815	2.3	4,713	10.0

Source: U.S. DOC, BEA, REIS, 1998.

major source of employment in Terrebonne Parish in 1950, 1960, 1975, 1980, and 1985 and in Lafourche Parish in 1960. The transportation and utilities sector was a major employment source in Lafourche Parish in 1970, 1980, and 1985. The time periods when mining and transportation were important sources of employment in the two parishes coincide with the rise of the offshore oil industry in the area. Services, government, and retail trade were the major sources of employment in Louisiana between 1970 and 1995. In 1990 and 1995, Lafourche and Terrebonne parishes had the same major sources of employment as the State. In the earlier years, services was the only consistent major source of employment in the two parishes and the State.

Mining was a major source of earnings in Terrebonne Parish between 1969 and 1995. Mining dropped from the major source of earnings in 1969 to the second major source in 1989. In Lafourche Parish, transportation and utilities have been a major source of earnings. The importance of transportation and utilities earnings shifted over time. In 1990 and 1995, transportation and utilities ranked third as a major source of earnings. Services, government, and manufacturing (in different order) have been the major sources of earnings in Louisiana since 1970. The service industry was a major source of earnings in Terrebonne Parish in each time period of interest between 1970 and 1995 as well. Lafourche Parish has shared different major sectors with the State over time. In 1970 and 1975, Lafourche and the State both had the government sector as a major source of earnings. In 1980, both included manufacturing and services as major earnings sources. Then in 1985 to 1995, they shared government and services as major sources of earnings.

Military employment. Military employment in Lafourche and Terrebonne parishes fluctuated between 1969 and 1995, but was never very large. It was somewhat larger in Terrebonne Parish, where military employment peaked at about 670 in 1989. In Lafourche Parish, military employment peaked about 600 also in 1989.

Relationship between sector employment and OCS oil and gas indicators. Tables 4-11 and 4-12 show the relationship between sector employment and OCS oil production, oil value, natural gas production, natural gas value, and trend or year for Lafourche and Terrebonne parishes, respectively. The trend in employment and OCS natural gas production show fairly consistent positive relationship in both parishes.

4.3.3 Changes in Personal Economy

Mean household income. Total mean household income in Lafourche and Terrebonne parishes was actually lower in 1990 than in 1970. In both parishes mean household income peaked in 1980 at $45,485 in Lafourche Parish and $46,481 in Terrebonne Parish. Mean household income was consistently higher in Terrebonne Parish than in Lafourche Parish in 1970, 1980, and 1990. Mean household income was higher in the two parishes in 1970, 1980, and 1990 than in Louisiana.

Table 4-11. Relationship between sector employment and OCS oil and gas indicators: Lafourche Parish.[1]

Sector	OCS Oil Production	OCS Oil Value	OCS Natural Gas Production	OCS Natural Gas Value	Trend or Year
Farm	0	+	-	0	-
Agriculture	0	-	+	0	+
Mining	0	+	-	0	-
Construction	0	0	+	0	+
Manufacturing	-	0	+	0	0
Transportation	-	0	0	+	+
Wholesale Trade	0	0	+	0	+
Retail Trade	0	0	+	0	+
FIRE	0	0	+	+	+
Services	0	-	+	0	+
Government	0	0	+	0	+

[1]Determined by examination of statistical results of linear regression of employment variables against oil or gas indicator and year. All estimates were corrected for 1st order autocorrelation when determined to exist.

Table 4-12. Relationship between sector employment and OCS oil and gas indicators: Terrebonne Parish.[1]

Sector	OCS Oil Production	OCS Oil Value	OCS Natural Gas Production	OCS Natural Gas Value	Trend or Year
Farm	0	+	-	0	-
Agriculture	0	-	+	0	+
Mining	0	+	0	0	0
Construction	0	0	+	0	+
Manufacturing	0	+	0	0	-
Transportation	0	+	+	0	0
Wholesale Trade	0	0	0	+	0
Retail Trade	0	0	+	+	+
FIRE	0	0	+	0	+
Services	0	0	+	+	+
Government	0	0	+	+	+

[1]Determined by examination of statistical results of linear regression of employment variables against oil or gas indicator and year. All estimates were corrected for 1st order autocorrelation when determined to exist.

The income trends reflect historic patterns of extractive industries in the South. Despite impressive spurts of prosperity and capital growth, the impact on individual earnings is seldom long-term.

Mean household income by race shows higher incomes for white households than black households in 1970, 1980, and 1990 in both parishes. Over time blacks have lost ground. In 1990, black mean household income as a percentage of white income was lower than in 1970 or 1980 in both parishes. Household income by race followed the same pattern as total mean household income with the household income in 1990 being lower than in 1970. In 1970 and 1980, total mean household income and household income by race were higher in the two parishes than in Louisiana. Mean household income for blacks in 1990 was quite similar in Terrebonne Parish ($19,690) and the State ($19,584). The annual rate of change in mean household income was negative in Lafourche and Terrebonne parishes for both total mean household income and by race. In contrast, that for the State was positive.

Per capita income and average wage per job. Per capita income in both parishes increased steadily between 1969 and 1981, declined between 1982 and 1987 in Lafourche Parish and 1982 to 1989 (except for 1984) in Terrebonne Parish and then rose again until 1995, except for a slight decline in 1992 in Terrebonne Parish. Per capita income in 1995 was still lower in both parishes than the peak year. Peak per capita income was about $18,650 (1981) in Lafourche Parish and $19,725 (1981) in Terrebonne Parish. Per capita income in both parishes was very similar between 1969 and 1995. Between 1969 and 1995, per capita income in Louisiana rose steadily. Per capita income in the two parishes was below that of the State until 1975 when per capita income in the parishes and the State was about the same. By 1980, per capita income in the two parishes was slightly higher than in the State. After 1980, per capita income in the State continued to increase. In 1995, per capita income was $20,320 in Louisiana compared with about $17,750 in Terrebonne Parish and $17,600 in Lafourche Parish.

The average wage per job peaked in Lafourche Parish and the State in 1978 and in Terrebonne Parish in 1979. The average wage per job was lower in both parishes in 1995 than in 1969. The average wage per job was consistently higher than per capita income in the two parishes and the State from 1969 to 1995.

4.3.4 Changes in a Social Indicator

Suicide rate. Suicides per 100,000 population in Lafourche and Terrebonne parishes show wide variations, although more so in Terrebonne Parish than in Lafourche Parish. In general, the suicide rates in the two parishes have been lower than that for Louisiana and for the nation. Both parishes had higher suicide rates at the beginning of the downturn in oil in the early 1980's, though the rate was 0 for both in 1980. The rate in Terrebonne Parish was 19.8 in 1983 and 15.8 in 1984 in Lafourche Parish. The highest rate in Terrebonne Parish, 20.6,

occurred in 1990. For Lafourche Parish, the highest rate occurred in 1994 when the rate was 20.8. Suicide rates in Louisiana and in the nation show less variation, and until about 1979 the rates in Louisiana were consistently lower than those for the nation. As mentioned previously, local rates always show more variation than the state or the nation. After 1982, the Louisiana suicide rate was consistently higher than the national rate.

4.4 Coastal Bend, Texas

San Patricio County is the single county in the Coastal Bend, Texas study area. San Patricio County is the smallest of the five county study areas in terms of land, population, employment, and earnings. OCS lease sales off of Texas began in 1954. Table 4-13 summarizes selected variables for the county at 5-year intervals from 1970 to 1995. Table 4-14 shows the annual rate of change for a subset of variables for five time periods between 1965 and 1995.

4.4.1 Changes in Demographics

Population. Population changes in San Patricio County at 10-year intervals from 1930 to 1990 and for 1995 are shown in Figures 4-9. Population in San Patricio County grew from about 23,800 in 1930 to 66,750 in 1995. The 1995 population is the highest the county has experienced. Between 1969 and 1983, the county's population increased about 30.7 percent, increasing from about 47,700 to 62,350. Population then decreased until 1990 when it began rising again and reached peak levels in 1993, 1994, and 1995. While the county's population was in decline, the population in the State rose by about 6.0 percent. The population decline in the county reflects geographic-economic bifurcation between major metropolitan areas and smaller urban and rural districts. The county's population increases in the 1970's and early 1980's followed by the decline tracks well with the rise and downturn in the offshore oil industry. The highest annual rate of change in population (2.7 percent per year) occurred between 1974 and 1981. The recent population gains coincide with major increases in military employment, and presumably new residents related to those increases.

Age distribution. The age distribution for San Patricio County is shown in Figure 4-10. Age distribution has shifted in the county since 1950 from a high proportion of children to a high proportion of persons 60 years and older. The proportion of children (age 0-19) declined steadily after its peak in 1960. Simultaneously, the proportion of working age residents (age 20 to 59) and older residents (age 60 and older) increased. Compared to the State, in 1990 San Patricio County had a larger proportion of children, a smaller proportion of working age residents, and about the same proportion of older residents. The proportion of older residents in the county and the State in 1990 was lower than that of the nation.

Table 4-13. Summary of selected variables: San Patricio County.

Variable	1970	1975	1980	1985	1990	1995
Changes in Demographics						
Total Population	47,337	50,609	58,322	61,135	58,818	66,741
Age						
0-9	10,617	NA	11,064	NA	10,317	NA
10-19	11,237	NA	12,009	NA	10,620	NA
20-29	5,572	NA	9,048	NA	7,600	NA
30-44	8,083	NA	10,878	NA	13,285	NA
45-59	6,752	NA	8,236	NA	8,276	NA
60+	5,027	NA	6,778	NA	8,651	NA
Race						
White	46,553	NA	49,914	NA	44,998	NA
Black	688	NA	624	NA	793	NA
Changes in Industry Structure						
Total Employment	14,706	15,980	19,399	19,536	19,148	21,499
Agricultural Services	2,244	1,962	2,100	1,694	1,617	1,585
Mining	501	536	843	1,393	679	609
Manufacturing	2,218	1,660	2,710	1,425	2,051	2,526
Military	248	217	172	200	236	2,278
Number of Wage/Salary Jobs	11,540	12,522	15,303	14,890	14,094	16,380
Total Earnings (thousands of $1998)	$ 368,235	$ 453,142	$ 512,660	$ 491,392	$ 420,299	$ 495,513
Agricultural Services	$ 40,026	$ 67,749	$ 3,459	$ 39,161	$ 7,048	$ 24,109
Mining	$ 11,992	$ 20,433	$ 29,698	$ 47,898	$ 17,148	$ 14,193
Manufacturing	$ 100,933	$ 88,185	$ 162,146	$ 78,680	$ 109,524	$ 127,351
Total Establishments	NA	NA	926	1,047	919	949
Agricultural Services	NA	NA	33	27	24	36
Mining	NA	NA	29	38	27	24
Manufacturing	NA	NA	31	29	27	39
Changes in Personal Economy						
Total Mean Household Income ($1998)	$ 34,369	NA	$ 42,576	NA	$ 36,663	NA
White Mean Household Income	$ 34,616	NA	$ 44,378	NA	$ 39,853	NA
Black Mean Household Income	$ 18,102	NA	$ 24,565	NA	$ 16,995	NA
Per Capita Income ($1998)	$ 12,055	$ 14,649	$ 16,018	$ 16,201	$ 14,976	$ 15,479
Average Wage Per Job ($1998)	$ 23,979	$ 25,148	$ 26,496	$ 24,245	$ 24,288	$ 24,564
Changes in a Social Indicator						
Suicide Rate per 100,000 Population	6.3	19.8	6.9	4.9	6.8	10.5

NA - Not Available

Source: See Table 4-1.

Table 4-14. Annual rate of change, San Patricio County.

Variable	1969-1974	1974-1981	1981-1987	1987-1995	1965-1995
Population	1.0	2.7	0.4	1.2	1.5
Personal Income ($1998)	6.3	5.8	-2.6	2.4	3.3
Per Capita Personal Income ($1998)	5.0	2.7	-2.9	1.1	1.3
Total Full and Part-Time Employment	2.8	4.1	-2.0	2.1	2.0
Earnings by Place of Work ($1998)	6.7	3.2	-5.2	3.0	1.5
Average Earnings per Job ($1998)	3.3	-0.8	-3.6	0.8	-0.3
Mining Employment	-0.2	19.6	-6.3	-2.0	0.9
Wages and Salary per Job ($1998)	1.7	0.1	-2.2	0.9	0.1

Source: Calculated based on U.S. DOC, BEA, REIS, 1998.

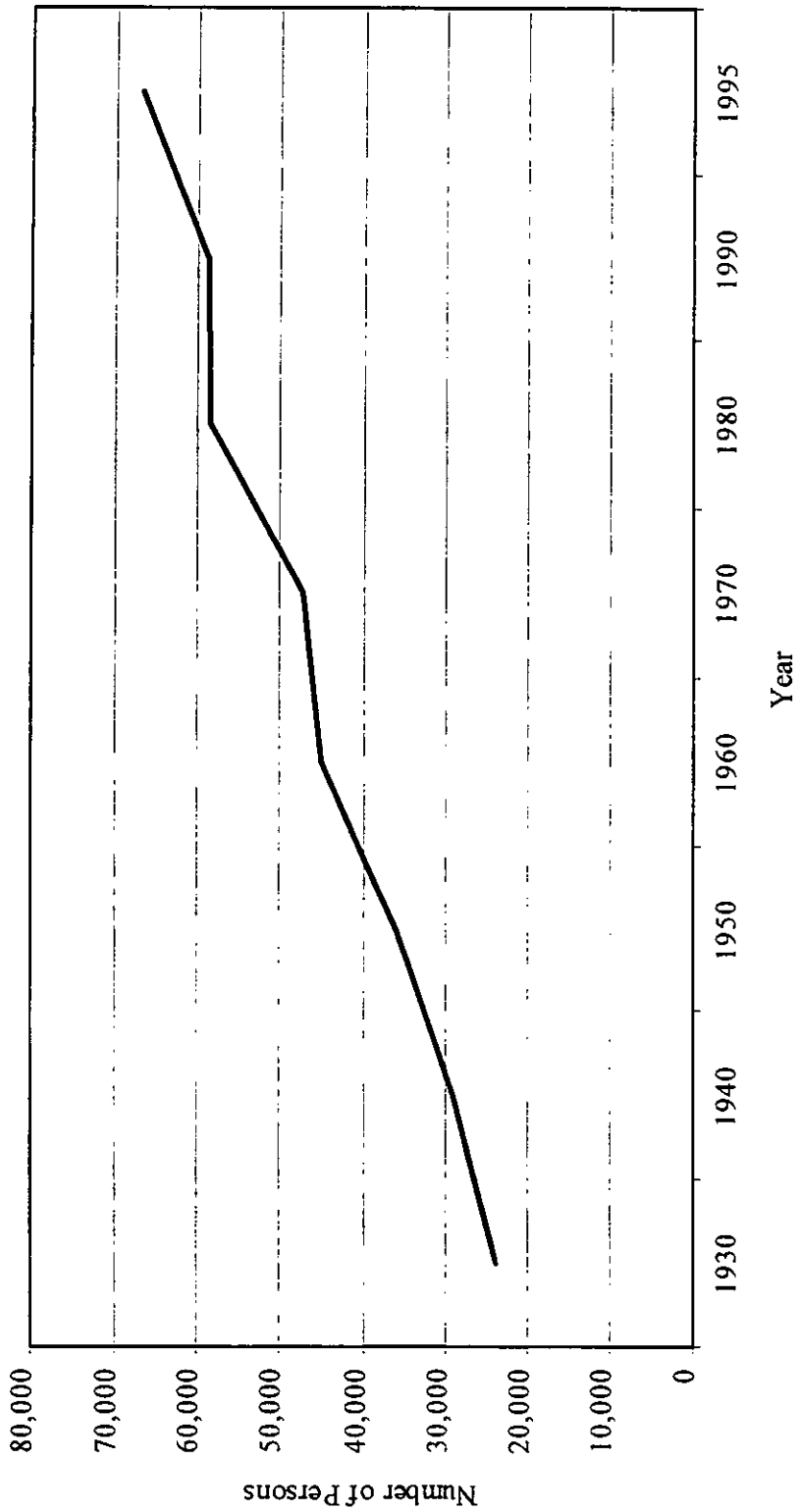

Figure 4-9. Population in San Patricio County, 1930 to 1995.

Source: LSU, 1996 and U.S. DOC, BEA, REIS, 1998.

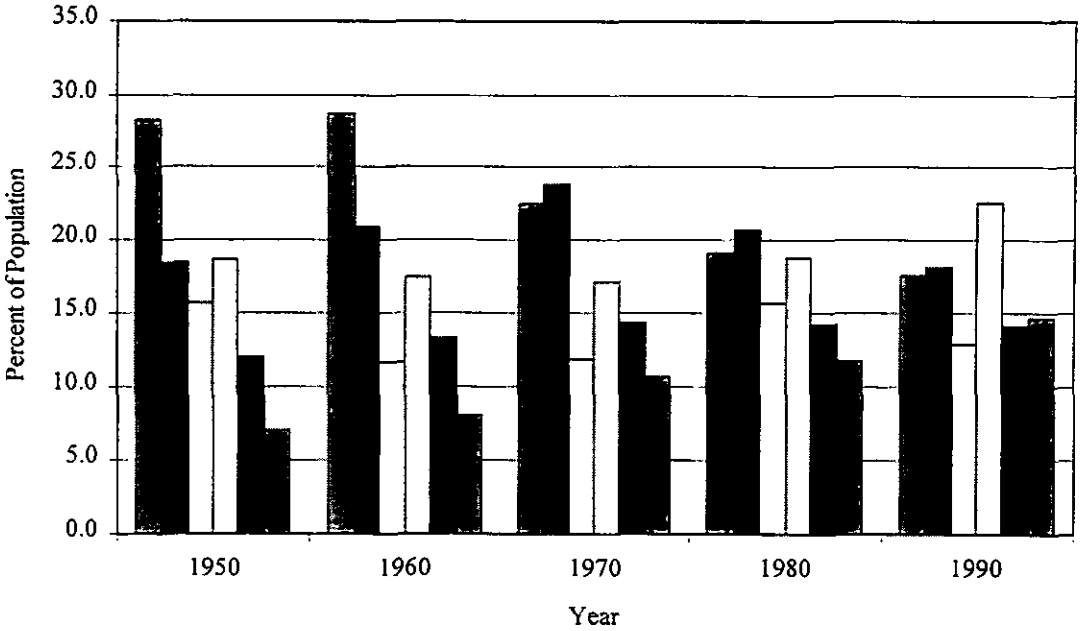

Figure 4-10. Age structure, San Patricio County, 1950 to 1990.

Source: LSU, 1996.

0-9 10-19 20-29 30-44 45-59 60+

Race. The racial composition of San Patricio County remains predominantly white, although the proportion of the population which is white decreased from about 98.1 percent in 1960 to about 76.5 percent in 1990. The proportion of the population which is black remained about 1 percent in 1960, 1970, 1980, and 1990. The proportion of other racial groups in the population has increased since 1960. In 1990, San Patricio County and the State had a similar proportion of white residents. In comparison with the State, the county had a much lower proportion of black residents.

It may be that the increase in the proportion of Hispanic residents and the stable black population reflect both the menial nature of employment in San Patricio County and the out-migration of better-qualified whites who have better job alternatives in the booming metropolitan areas, especially Houston. Again, this reflects historic demographic patterns for marginal economies outside metropolitan areas in the South.

Educational attainment. Like Texas and the nation, the population in San Patricio County has become better educated over time (see Table 4-15). Between 1940 and 1950, the proportion of those 25 years of age and older with an eightth grade education or less increased and the proportion of those finishing high school decreased. Since 1950, the proportion of the population age 25 and older who have an eighth grade education or less has decreased, while the proportion finishing high school and completing some college has increased. The proportion of those finishing high school and those with a 4-year college degree program or higher increased between 1970 and 1980, but remained about the same in 1990 as in 1980. In spite of the increases in educational attainment achieved in the county, about 22.4 percent of the 1990 population in San Patricio County age 25 years and older had less than a ninth grade education. This compares with 13.5 percent for Texas and 11.2 percent for the nation.

The issue is not so much that San Patricio County residents are better educated today than they were 50 years ago, but that they continue to lag significantly behind the rest of Texas as well as the U.S. in educational attainment. Writer John Dos Passos, surveying the transformation of the nation's economy during World War II, declared that "New Industries Make New Men" (Dos Passos, 1944). Whatever validity the claim may have for the country as a whole, it is a much weaker predictor in the South; the reverse, in fact, may be closer to the reality of Southern economic development since World War II. New industries have tended to perpetuate the low-wage, low-skilled nature of the Southern work force. Newer economic activities that diverge from manufacturing have a better track record at upgrading economies, but those activities tend to center in the South's major metropolitan areas where support services, cultural amenities, transportation, and educational opportunities considerably outpace the economic attractiveness of other areas, and a good portion of the new white-collar positions go to in-migrants. The lagging educational attainment of San Patricio County residents is both a reflection of these geographic-economic disparities and a cause for them.

Table 4-15. Educational attainment, San Patricio County, 1940 to 1990.

	1940		1950		1960		1970		1980		1990	
	No.	%	No.	%	No.	%	No.	%	No.	%	No.	%
Persons 25 and older	13,723		16,280		20,155		22,529		30,272		34,297	
Finished 8th grade or less	7,993	58.2	10,250	63.0	11,456	56.8	9,876	43.8	9,754	32.2	7,688	22.4
Finished high school	1,733	12.6	1,660	10.2	3,358	16.7	4,877	21.6	8,161	27.0	9,073	26.5
Some college	866	6.3	880	5.4	1,288	6.4	2,074	9.2	4,169	13.8	7,958	23.2
4 year college degree or higher	511	3.7	585	3.6	953	4.7	1,702	7.6	3,289	10.9	3,764	11.0

Source: LSU, 1996.

4.4.2 Changes in Industry Structure

Employment, earnings, and establishments in sectors of interest. Employment and earnings (by place of work) in the three sectors of interest, agriculture and agricultural services, mining, and manufacturing as well as total employment and earnings, for San Patricio County from 1969 to 1995 are shown in Figures 4-11- and 4-12. Total employment in San Patricio County increased from about 14,200 in 1969 to 21,500 in 1995, an increase of 51.3 percent. In contrast, employment in the State increased about 103 percent during the same time period. Growth in county employment was not steady. Employment generally grew between 1969 and 1981, when employment initially peaked at about 20,900. This was followed by an almost steady decline in employment between 1981 and 1992, followed by increases in 1993 through 1995. The highest annual rate of change in employment (4.1 percent per year) occurred between 1974 and 1981. Employment in 1995 (about 21,500) was slightly higher than the previous peak of about 20,900 in 1981. Total earnings in San Patricio County peaked at about $579 million in 1981. Following the peak, earnings declined 31.1 percent between 1981 and 1987. Earnings then rose again between 1987 and 1995, except for slight decreases in 1989 and 1992. Earnings in 1995 ($495.5 million) were still about 14.5 percent below the peak 1981 level. The rise in earnings tracks well with the thriving stage of the offshore oil industry. The decline in the 1980's also tracks with the downturn in the industry, although earnings in San Patricio County began to rise again about 5 years before the recovery of the offshore oil industry in the early 1990's. The highest annual rate of change in earnings (6.7 percent per year) occurred between 1969 and 1974. There was a negative rate of change in earnings between 1981 and 1987.

Agriculture was a major source of employment in San Patricio County before 1970. San Patricio County has the smallest land area of the five study area counties, but has more acreage in farms than the other study area counties and ranks fourth of the five counties in terms of number of farms. Employment in agriculture and agricultural services between 1969 and 1995 was highest in 1969. Between 1969 and 1985, employment in agriculture and agricultural services fluctuated. After 1985, there was a steady decline. Earnings from agriculture and agriculture services peaked in 1973 at about $88.9 million . Earnings from agriculture and agricultural services in 1995 were 73.0 percent below the 1973 high.

Mining employment and earnings have generally been less important in San Patricio County than agriculture and agricultural services. Mining employment in San Patricio County peaked at about 1,400 in 1986 and at the time accounted for about 7.7 percent of employment. In 1987, mining employment was about 50 percent of what it had been in the year before. Mining employment in San Patricio County entered a downturn about 3 years later than the industry in the larger GOM region. The offshore oil industry sustained a downturn until 1992 when it entered a recovery period. Mining employment in San Patricio County, however, continued to decline until 1993. The 1995 mining employment (about 600) was less than one-half of peak mining employment. (See Table 4-14 for the annual rate of change in mining

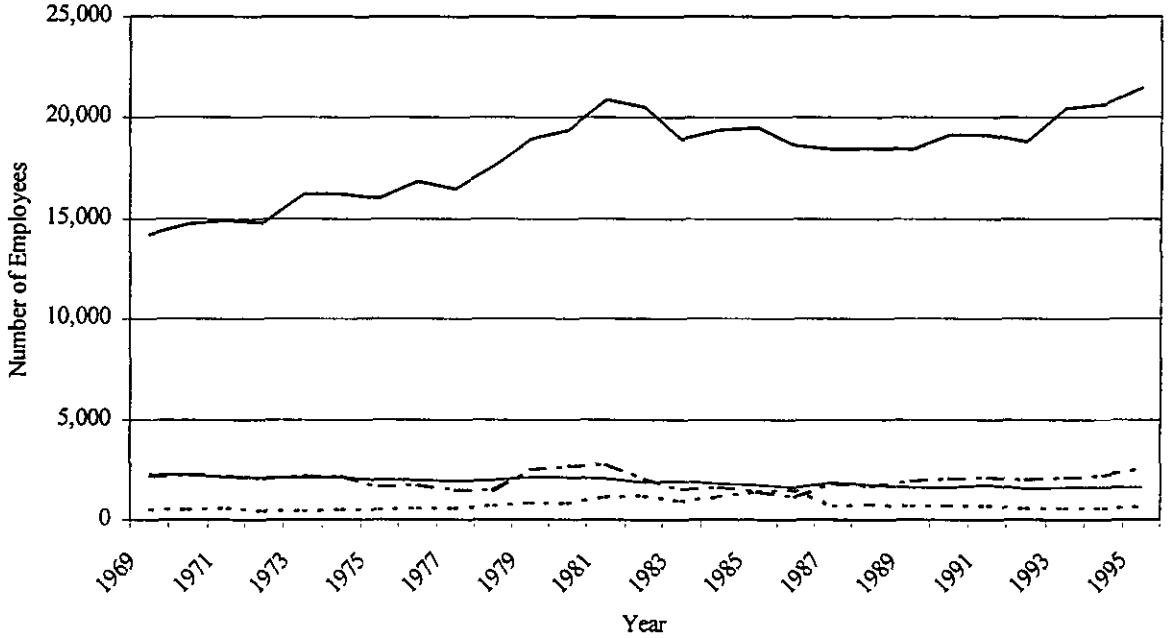

Figure 4-11. Employment in selected industries, San Patricio County, 1969 to 1995.
Source: U.S. DOC, BEA, REIS, 1998.

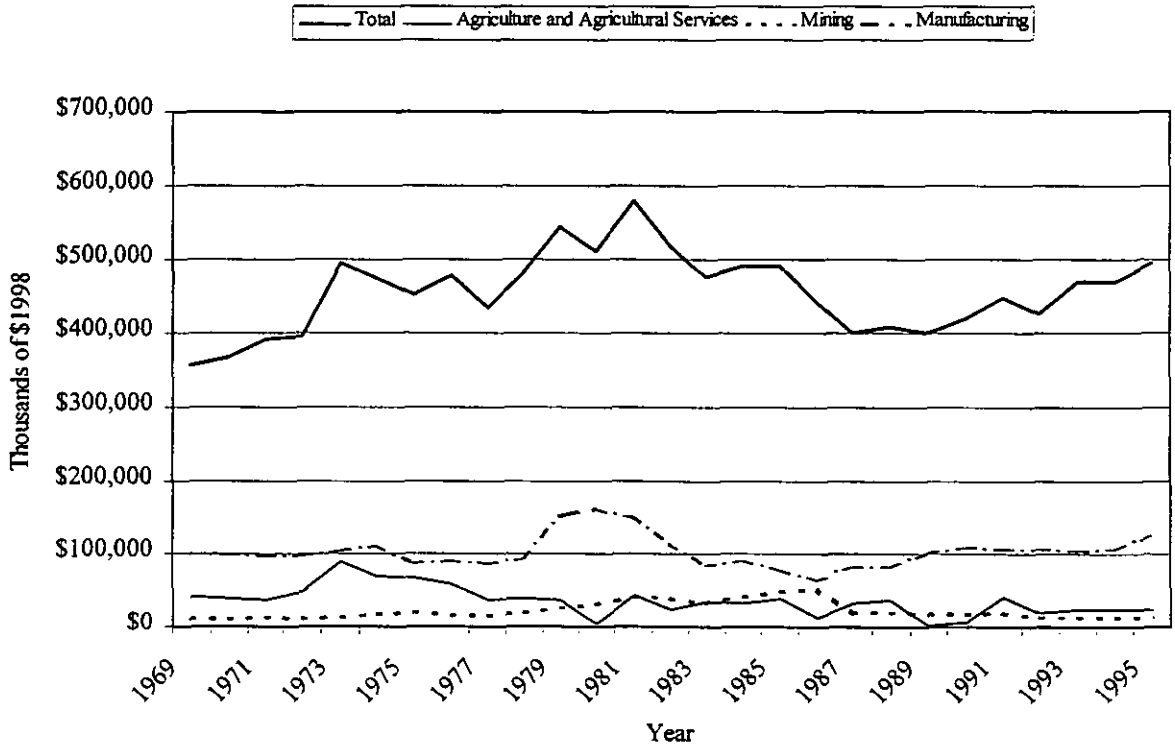

Figure 4-12. Earnings in selected industries, San Patricio County, 1969 to 1995.

Source: U.S. DOC, BEA, REIS, 1998.

employment during five time periods between 1965 and 1995.) Mining earnings in San Patricio County peaked at about $53.5 million in 1986, the same year as peak mining employment. At the time, mining earnings accounted for about 12.1 percent of total earnings in the county, and all mining earnings came from oil and gas extraction.

Manufacturing employment in San Patricio County fluctuated between 1969 and 1995. Peak manufacturing employment reached about 2,750 in 1981. Manufacturing employment then declined until 1986 and rose from about 1,750 to 2,500 (42.6 percent) between 1987 and 1995. The rise in manufacturing employment in the 1970's and early 1980's and the decline in the early to mid-1980's tracks well with the rise and downturn in the offshore oil industry. However, the offshore oil industry continued in a downward trend until the early 1990's, while manufacturing employment in San Patricio County began to increase again in 1987.

Total establishments increased between 1980 and 1985, then decreased between 1985 and 1990 and increased between 1990 and 1995. The annual average rate of growth of total establishments in the county between 1977 and 1995 was 0.6 percent compared to 3.3 percent for the State, and 2.8 percent for the nation. Establishments in agriculture and agricultural services, mining, and manufacturing each had a different pattern in terms of growth and decline in number of establishments. In 1995, there were three more agriculture and agricultural services and eight more manufacturing establishments than in 1980, while there were five fewer mining establishments than in 1980. Mining establishments peaked in 1985.

Major sources of employment and earnings. Services, government, and retail trade were the major sources of employment in San Patricio County and in Texas from 1969 to 1995, although not always in the same order for the county and the State. Construction also was a major source of employment in 1975 in the county, but not in the State. Services, government, and retail trade became the major employment sectors at the national level in about 1990. Manufacturing, government, and services have fairly consistently been the major sources of earnings in San Patricio County, although construction replaced services in the 1975 to 1985 period. Between 1969 and 1978 and from 1988 to 1995, health services were the predominant source of earnings in the services sector in the county. Business services were the major source of service earnings between 1979 and 1987. Earnings in Texas from 1969 to 1995 consistently came from manufacturing, government, and services, although the order has changed over time.

Military employment. Military employment in San Patricio County fluctuated between about 170 and 300 from 1969 to 1991. Then in 1992, military employment increased to about 960. It climbed again in 1993, 1994, and 1995 reaching about 2,300 in 1995. Until 1991, the county had the smallest number of military employees of the five study counties. The county jumped to number two in terms of number of military employees in the study area counties, behind Mobile County, after 1991. The increase in military employment coincided with construction of the Naval Station Ingleside (see Section 6.5 for a detailed discussion).

Relationship between sector employment and OCS oil and gas indicators. Table 4-16 shows the relationship between sector employment and OCS oil production, oil value, natural gas production, natural gas value, and trend or year for San Patricio County. Most of the relationships are neutral, although there are a number of positive relationships between OCS natural gas production and some sectors (agriculture, FIRE, services, and government) and trend (agriculture, retail trade, FIRE, services, and government).

4.4.3 Changes in Personal Economy

Mean household income. Total mean household income in San Patricio County was higher in 1980 than in 1970 and 1990. Mean household income in 1990 ($36,663) was about 6.7 percent higher than in 1970 ($34,369), and 13.9 percent below the 1980 level ($42,576). Mean household income for white households followed the same up and down pattern as total mean household income, but was consistently higher than total mean household income. Mean household income for black households was less than half of that for white households in 1990. The same was true at the State level as well, although mean household income of whites was higher in San Patricio County than in the State and mean household income of blacks was higher in the State than in San Patricio County.

The racial disparity reflects historic patterns of discrimination that is more consistent with Black Belt counties of the Deep South than with Texas. The relatively low-income, low-skilled economy of San Patricio County seems similar to rural or small town Deep South economic profiles.

Per capita income and average wage per job. Per capita income generally increased in the county between 1969 and 1981, peaking at about $17,250. Between 1981 and 1990, per capita income declined 15.9 percent to about $14,500. It then generally climbed in the 1990's to about $15,500 in 1995. The average wage per job in San Patricio County fluctuated between 1969 and 1979 when it peaked at about $27,000. It then generally declined between 1980 and 1987 when it reached a low of about $23,000. Between 1988 and 1995, the average wage per job fluctuated between about $23,500 and $24,500. The average wage per job has been consistently higher than per capita income and lower than the average wage per job in the State.

4.4.4 Changes in a Social Indicator

Suicide rate. Suicides per 100,000 population in San Patricio County show wider variation than the rates in Texas and the nation, which have been fairly similar. Between 1969 and 1995 there were two periods of high rates -- 1973 to 1975 when rates were 19.8 to 21.7 (compared with 11.6 to 13.4 in the State) and 1986 to 1988 when rates were 15.2 to 17.8 (compared with 13.1 to 13.7 in the State). The second period occurred during the downturn in the offshore oil industry.

Table 4-16. Relationship between sector employment and OCS oil and gas indicators: San Patricio County.[1]

Sector	OCS Oil Production	OCS Oil Value	OCS Natural Gas Production	OCS Natural Gas Value	Trend or Year
Farm	0	0	-	0	-
Agriculture	-	0	+	0	+
Mining	0	0	-	+	0
Construction	0	+	0	-	0
Manufacturing	0	0	0	0	0
Transportation	0	0	-	+	0
Wholesale Trade	-	0	0	0	0
Retail Trade	0	0	0	+	+
FIRE	0	0	+	0	+
Services	0	0	+	0	+
Government	0	-	+	0	+

[1]Determined by examination of statistical results of linear regression of employment variables against oil or gas indicator and year. All estimates were corrected for 1st order autocorrelation when determined to exist.

4.5 Mobile Bay

The Mobile Bay area includes Baldwin and Mobile counties, the only coastal counties in Alabama. Offshore oil and gas development came late to the area in comparison to Louisiana and Texas. Mobil Offshore Exploration and Producing Southeast, Inc. discovered natural gas in late 1979, years after offshore oil industry activities began in Louisiana and Texas. Although geographically larger than Mobile County, Baldwin County is smaller than Mobile County in terms of population, employment, and earnings. Tables 4-17 and 4-18 summarize selected variables at 5-year intervals from 1970 to 1995 for Baldwin and Mobile counties, respectively. Tables 4-19 and 4-20 show the annual rate of change for a subset of variables for five time periods between 1969 and 1995.

4.5.1 Changes in Demographics

Population. Population changes in Baldwin and Mobile counties at 10-year intervals from 1930 to 1990 and for 1995 are shown in Figure 4-13. Population changes in the two counties do not track with the increases and decreases in the offshore oil industry. Mobile County is by far the largest of the five study area counties in terms of population, with a 1995 population estimated at about 394,400. Its 1930 population of 118,350 (also largest of the five study area counties) is about what Baldwin's population was in 1995 (119,400). Mobile County's greatest growth period occurred between 1940 and 1960 when its population more than doubled. Absolute increases in population were slightly higher between 1940 and 1950 (89,100) than between 1950 and 1960 (83,200). Population growth had slowed by 1969. Between 1969 and 1995, population grew 24.0 percent, or an annual average rate of 3.6 percent per year. The annual average rate of growth between 1965 and 1995 was higher than that of the State and the nation, but lower than that for Baldwin County. Mobile County benefited from the economic upsurge during and immediately after World War II. Economic opportunity triggered migration of blacks and particularly whites to the city from the surrounding countryside. Population figures reflect this period of prosperity. However, the national decline in industrial activities, turmoil in the city's educational system, and white flight changed the demographic balance of the city and the surrounding counties. Baldwin County emerged as a white alternative to Mobile and, again, demographic figures reflect this as the county's population has become whiter over time (see discussion of racial composition below). This has become a typical national (as well as Southern) demographic phenomenon: urban, predominantly black and/or Hispanic counties surrounded by primarily white, affluent suburbs. Atlanta, Birmingham, New Orleans, and Richmond have experienced this racial and social bifurcation. Their suburbs are among the fastest-growing entities in the United States.

In addition to the racial bifurcation reflected in these demographics, economic disparities arise as well. Knowledge functions that drive the high-technology, service-oriented economies of the South's metropolitan areas are located in the cities and, increasingly, in the suburban areas. Regardless of location, however, these activities provide high-wage, high-skilled

Table 4-17. Summary of selected variables: Baldwin County.

Variable	1970	1975	1980	1985	1990	1995
Changes in Demographics						
Total Population	59,474	67,861	78,931	89,401	98,922	119,373
Age						
0-9	13,348	NA	12,745	NA	13,794	NA
10-19	12,733	NA	14,135	NA	14,544	NA
20-29	7,388	NA	11,647	NA	12,484	NA
30-44	9,433	NA	14,590	NA	21,303	NA
45-59	9,513	NA	11,969	NA	16,065	NA
60+	8,967	NA	13,470	NA	20,090	NA
Race						
White	48,483	NA	65,922	NA	84,557	NA
Black	10,566	NA	12,035	NA	12,574	NA
Changes in Industry Structure						
Total Employment	19,747	24,534	27,972	34,468	41,025	54,321
Agricultural Services	3,381	3,552	3,381	2,880	2,522	2,717
Mining	0	124	72	271	148	186
Manufacturing	3,293	4,062	4,034	4,812	5,568	5,822
Military	635	614	609	803	903	862
Number of Wage/Salary Jobs	14,707	18,248	20,301	25,341	30,904	42,018
Total Earnings (thousands of $1998)	$ 342,630	$ 483,873	$ 488,267	$ 637,906	$ 747,636	$ 1,056,755
Agricultural Services	$ 37,042	$ 64,100	$ 19,287	$ 36,398	$ 23,812	$ 28,356
Mining	$ 282	$ 4,415	$ 4,672	$ 8,341	$ 2,560	$ 2,537
Manufacturing	$ 74,958	$ 101,858	$ 95,949	$ 120,911	$ 147,211	$ 153,456
Total Establishments	NA	NA	1,502	2,151	2,384	3,238
Agricultural Services	NA	NA	22	27	34	74
Mining	NA	NA	1	5	3	8
Manufacturing	NA	NA	94	119	131	146
Changes in Personal Economy						
Total Mean Household Income ($1998)	$ 34,961	NA	$ 38,428	NA	$ 40,206	NA
White Mean Household Income	$ 37,301	NA	$ 40,341	NA	$ 42,300	NA
Black Mean Household Income	$ 19,997	NA	$ 24,723	NA	$ 22,527	NA
Per Capita Income ($1998)	$ 12,050	$ 15,145	$ 15,375	$ 17,474	$ 19,350	$ 21,552
Average Wage Per Job ($1998)	$ 17,500	$ 18,966	$ 18,636	$ 19,095	$ 18,680	$ 19,305
Changes in a Social Indicator						
Suicide Rate per 100,000 Population	6.7	17.0	5.1	18.9	15.3	12.0

NA - Not Available

Source: See Table 4-1.

Table 4-18. Summary of selected variables: Mobile County.

Variable	1970	1975	1980	1985	1990	1995
Changes in Demographics						
Total Population	318,311	335,235	366,205	378,847	379,135	394,420
Age						
0-9	64,190	NA	62,036	NA	59,862	NA
10-19	68,399	NA	66,447	NA	59,771	NA
20-29	44,521	NA	67,478	NA	57,221	NA
30-44	53,028	NA	66,807	NA	88,675	NA
45-59	49,434	NA	51,768	NA	52,125	NA
60+	37,736	NA	50,444	NA	60,989	NA
Race						
White	214,049	NA	246,610	NA	254,740	NA
Black	102,356	NA	114,983	NA	117,816	NA
Changes in Industry Structure						
Total Employment	121,213	141,421	168,642	171,034	184,013	206,917
Agricultural Services	3,510	4,585	5,261	4,770	4,187	4,153
Mining	179	530	1,221	1,243	848	713
Manufacturing	22,101	23,323	25,709	22,285	23,227	22,629
Military	3,694	3,280	4,646	4,271	4,343	3,645
Number of Wage/Salary Jobs	109,038	125,321	148,227	148,243	160,438	180,740
Total Earnings (thousands of $1998)	$ 3,173,437	$ 3,870,345	$ 4,558,447	$ 4,639,542	$ 5,010,544	$ 5,722,890
Agricultural Services	$ 50,836	$ 95,191	$ 87,118	$ 74,402	$ 72,358	$ 56,736
Mining	$ 4,803	$ 25,985	$ 48,573	$ 34,923	$ 23,054	$ 22,655
Manufacturing	$ 810,845	$ 917,382	$ 1,087,842	$ 977,845	$ 1,025,026	$ 1,040,198
Total Establishments	NA	NA	6,973	8,325	8,650	9,269
Agricultural Services	NA	NA	95	105	123	151
Mining	NA	NA	20	25	20	22
Manufacturing	NA	NA	345	391	417	477
Changes in Personal Economy						
Total Mean Household Income ($1998)	$ 38,154	NA	$ 39,500	NA	$ 37,773	NA
White Mean Household Income	$ 44,094	NA	$ 45,110	NA	$ 43,949	NA
Black Mean Household Income	$ 22,173	NA	$ 25,235	NA	$ 22,649	NA
Per Capita Income ($1998)	12,525	14,864	15,929	16,232	17,756	19,153
Average Wage Per Job ($1998)	25,034	25,988	25,656	25,891	25,582	25,884
Changes in a Social Indicators						
Suicide Rate per 100,000 Population	8.5	9.4	12.9	7.2	15.3	14.3

NA - Not Available
Source: See Table 4-1.

Table 4-19. Annual rate of change, Baldwin County.

Baldwin	1969-1974	1974-1981	1981-1987	1987-1995	1969-1995
Population	3.2	3.1	2.7	3.5	4.2
Personal Income ($1998)	8.8	4.2	5.0	6.6	10.4
Per Capita Personal Income ($1998)	4.8	0.9	2.0	2.4	3.0
Total Full and Part-Time Employment	3.8	3.1	4.3	6.2	6.6
Earnings by Place of Work ($1998)	8.7	0.5	5.8	6.8	8.0
Average Earnings per Job ($1998)	4.1	-2.2	1.2	0.5	0.5
Mining Employment	10.9	54.2	0.7	1.2	28.7
Wages and Salary per Job ($1998)	2.7	-0.8	0.7	0.1	0.5

Source: Calculated based on U.S. DOC, BEA, REIS, 1998.

Table 4-20. Annual rate of change, Mobile County.

Mobile	1969-1974	1974-1981	1981-1987	1987-1995	1969-1995
Population	0.7	1.8	0.6	0.3	0.9
Personal Income ($1998)	4.7	3.4	1.3	2.4	3.7
Per Capita Personal Income ($1998)	3.8	1.4	0.7	2.0	2.2
Total Full and Part-Time Employment	2.8	3.2	0.4	2.4	2.7
Earnings by Place of Work ($1998)	4.0	2.9	0.9	2.5	3.2
Average Earnings per Job ($1998)	1.0	-0.2	0.5	0.1	0.3
Mining Employment	29.2	29.6	-7.2	-1.0	11.4
Wages and Salary per Job ($1998)	0.9	-0.2	0.4	-0.1	0.2

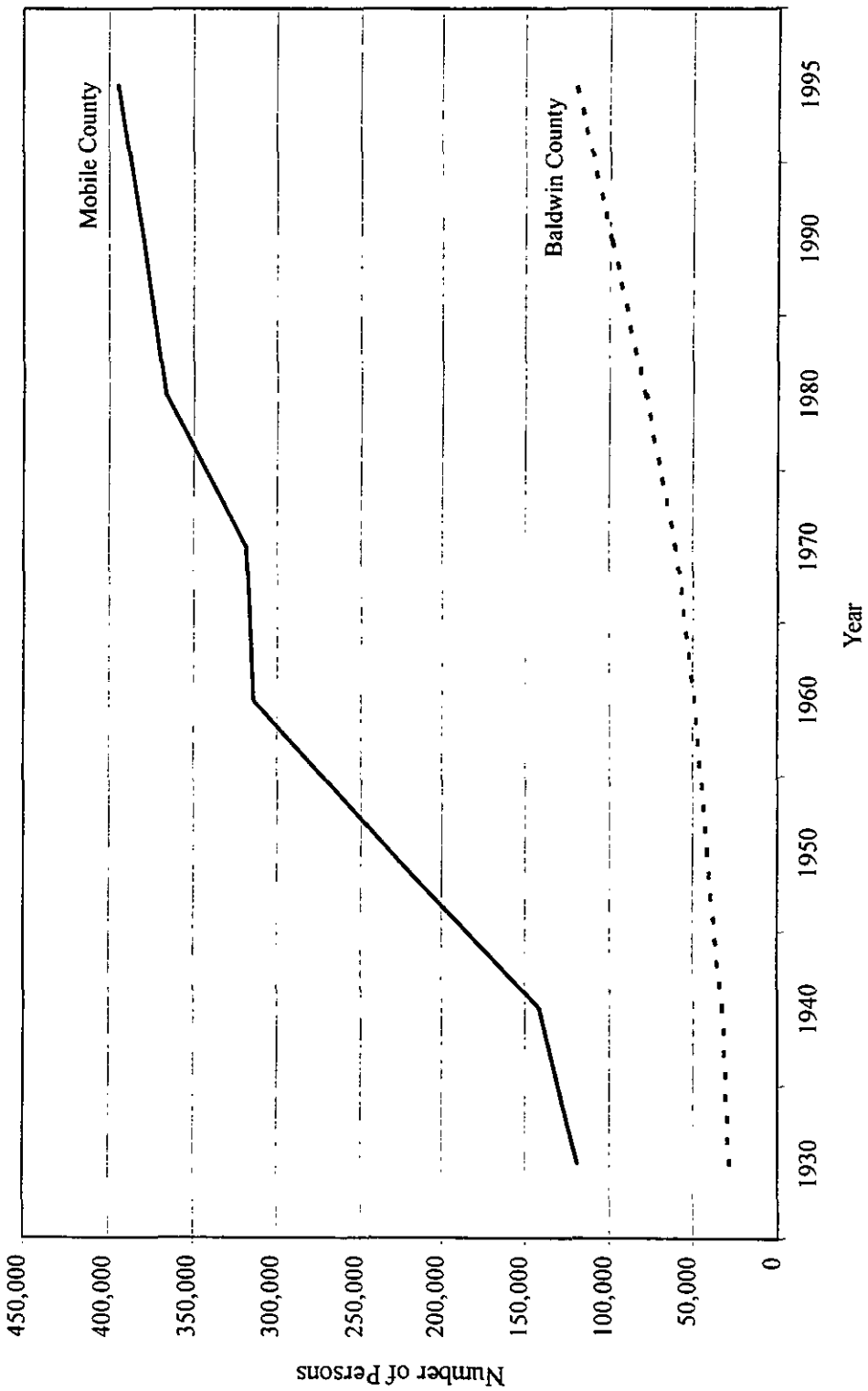

Figure 4-13. Population of Baldwin and Mobile counties, 1930 to 1995.

Source: LSU, 1996 and U.S. DOC, BEA, REIS, 1998.

employment for those who live in the suburbs and low-wage, low-skilled employment for those who live in the cities, reflecting the bifurcated nature of the workforce in the South's new economy as well as its geographic distinctions.

Baldwin County's population growth came later than Mobile County's. Population has increased steadily in the county, growing from about 28,300 in 1930 to about 119,400 in 1995. The decade of greatest growth was between 1970 and 1980, when population increased about 32.7 percent. Population growth in the 1990's has also been high, about a 20.7 percent increase between 1990 and 1995. Population in the county more than doubled between 1969 and 1995. The annual average rate of growth between 1969 and 1995, 4.2 percent, was the highest of the five study counties, all but Florida of the Gulf of Mexico States, and the United States. The period of highest growth occurred between 1987 and 1995, when the annual rate of change was 3.5 percent per year.

Age distribution. The age distributions for Baldwin and Mobile counties at 10-year intervals from 1950 to 1990 are shown in Figures 4-14 and 4-15, respectively. Age distribution has shifted in both counties since 1950. The proportion of children (age 0 to 19) declined in both counties in each decade since 1960. The proportion of those 60 years and older has increased in both counties, but more noticeably in Baldwin County where there is a growing retiree population in the coastal area. About 20.4 percent of Baldwin County's 1990 population was 60 years of age or older compared to 16.1 percent in Mobile County, 17.4 percent in Alabama, and 16.8 percent in the nation. The annual average rate of change from 1950 to 1990 was highest in both counties for those 60 years and older; 9.2 percent in Baldwin County and 5.9 percent in Mobile County. Mobile County has consistently had a higher proportion of people age 20 to 59 compared to Baldwin County. Mobile County experienced a negative growth rate of those 30 to 44 years of age between 1960 and 1970 and of those 20 to 29 years of age between 1980 and 1990.

Race. Alabama, like the other GOM States, has a large minority population compared to the nation, although the population is predominantly white. Baldwin and Mobile counties follow this pattern. Both counties have predominantly white populations, although Baldwin County has had a higher proportion of whites than Mobile County. Between 1960 and 1990, the proportion of Baldwin County's population that is white increased from about 79.0 percent to 86.0 percent. The proportion of blacks in the population decreased from about 21.0 percent in 1960 to 12.9 percent in 1990. In Mobile County the proportion of the population that is white was about the same in 1960 (67.7 percent) as it was in 1990 (67.3 percent). The proportion of the population that is black remained very similar as well -- 32.1 percent in 1960 and 31.1 percent in 1990. This means that the proportion of other racial groups has increased. In comparison to the State, Baldwin County has consistently had a higher proportion of whites and a lower proportion of blacks than Alabama. In 1960, Mobile County had a higher proportion of whites than the State, but by 1990 the State had a higher proportion of whites

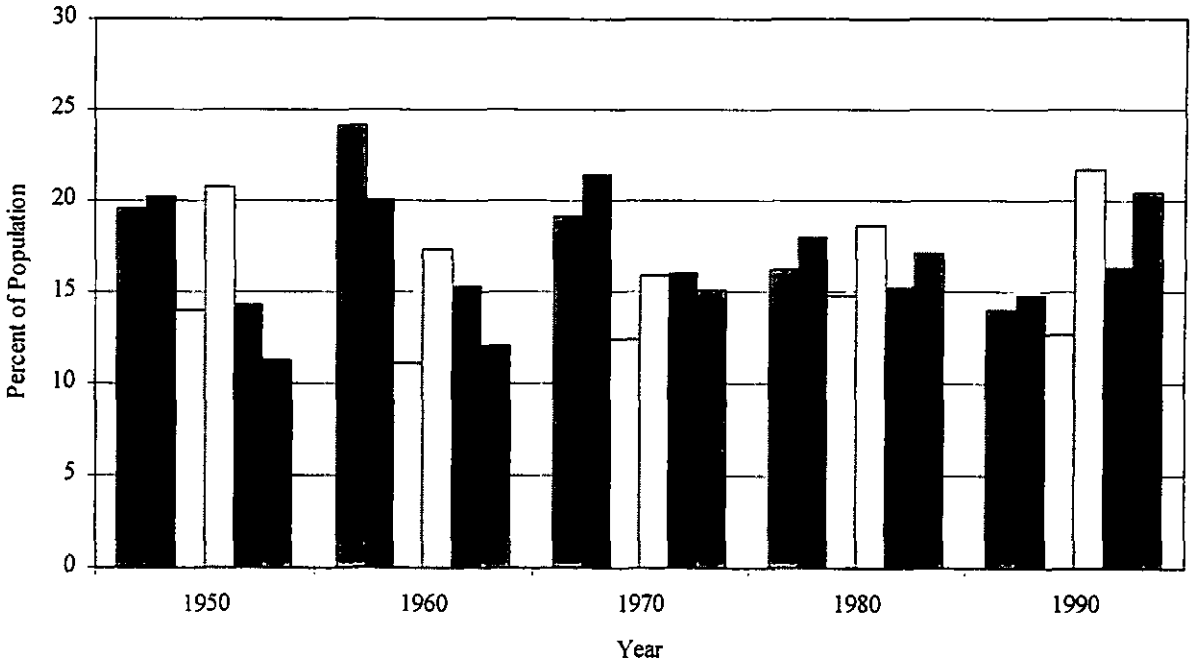

Figure 4-14. Age structure, Baldwin County, 1950 to 1990.

Source: LSU, 1996.

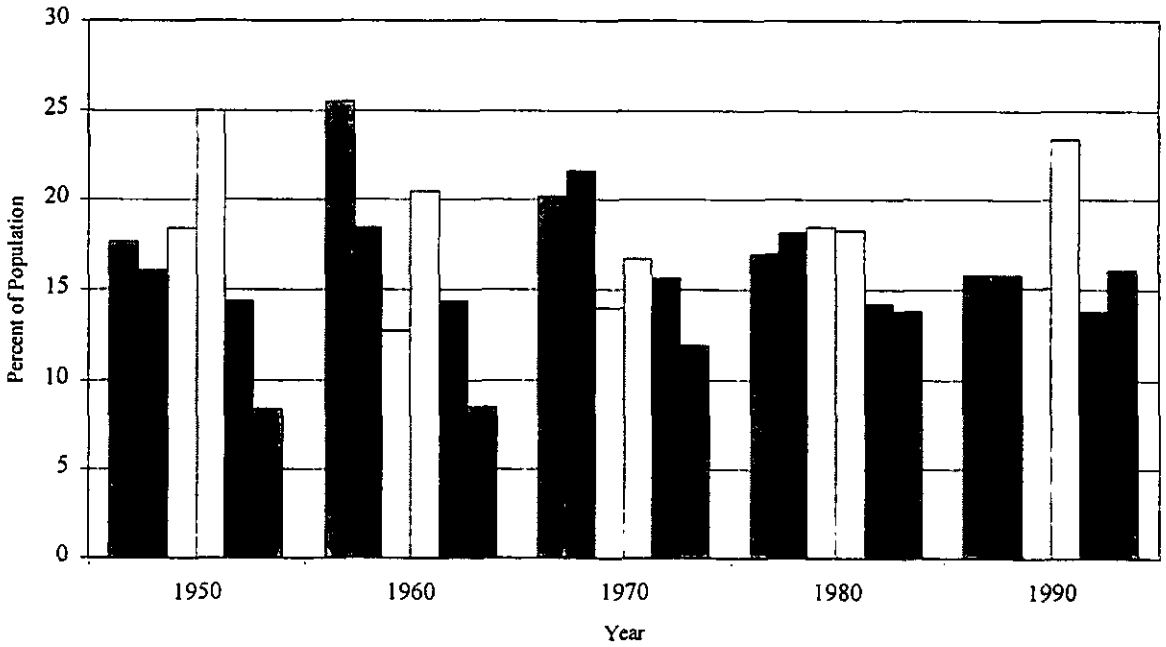

Figure 4-15. Age structure, Mobile County, 1950 to 1990.

Source: LSU, 1996.

than the county. In both years, Mobile County had a higher proportion of blacks than the State and the nation.

Educational attainment. Like Alabama, the other GOM States, and the nation, the populations of Baldwin and Mobile counties age 25 years and older have become better educated over time (see Tables 4-21 and 4-22). Between 1940 and 1980, Mobile County had a higher percentage of population with high school degrees or more compared with Baldwin County. By 1990, Baldwin County had a larger proportion of the population with high school degrees or higher. In 1990, about 10 percent of the adult population in both counties had finished eighth grade or less, a decrease when compared with over 30 percent in 1970 in both counties. The proportion of the population age 25 years and older with high school degrees or higher in Mobile and Baldwin counties in 1970 was similar to that in the State. By 1980, the proportion in both counties exceeded that in the State. Educational attainment has traditionally been higher in the nation than in the State and the counties. Baldwin and Mobile counties have noticeably higher proportions of residents 25 years and older with high school or higher education levels compared to the other study area counties.

The stronger educational profile for both Mobile and Baldwin counties compared with other study areas is consistent with generally higher educational achievement in the South's cities and their suburbs. This also reflects the economic diversity of these areas and benefits the future economic viability of these localities as well.

4.5.2 Changes in Industry Structure

Employment, earnings, and establishments in sectors of interest. Employment and earnings (by place of work) in the three sectors of interest, agriculture and agricultural services, mining, and manufacturing as well as total employment and earnings, for the two counties from 1969 to 1995 are shown in Figures 4-16 to 4-19. Total employment in Baldwin County increased from about 20,000 in 1969 to 54,300 in 1995, an increase of about 172 percent. During the same time period, the State only experienced an increase of 61.0 percent in employment. Total earnings in Baldwin County more than tripled between 1969 and 1995, rising to $1,056 million in 1995. Total employment and total earnings in Mobile County grew more slowly, from about 121,050 to 206,900 between 1969 and 1995, or 70.9 percent, for total employment and from $3,141 million to $5,722 million, or 82.2 percent, for total earnings.

Between 1969 and 1995, Baldwin County experienced an annual average rate of change in total employment of 6.6 percent, compared to 2.7 percent in Mobile County and 2.4 percent in Alabama. Similarly, the annual average rate of change in earnings in Baldwin County (8.0 percent) was higher than that in Mobile County (3.2 percent) and in Alabama (3.3 percent). Baldwin County had the highest annual average rate of change for employment and earnings of any of the five study area counties and five study area States, including Florida and

Table 4-21. Educational attainment, Baldwin County, 1940 to 1990.

	1940		1950		1960		1970		1980		1990	
	No.	%	No.	%	No.	%	No.	%	No.	%	No.	%
Persons 25 and older	15,659		20,280		24,429		31,524		45,605		64,623	
Finished 8th grade or less	10,756	68.7	12,515	61.7	10,369	42.4	11,419	36.2	9,822	21.5	6,386	9.9
Finished high school	1,361	8.7	2,465	12.2	4,595	18.8	8,426	26.7	15,380	33.7	20,544	31.8
Some college	752	4.8	1,000	4.9	1,606	6.6	2,334	7.4	6,602	14.5	15,900	24.6
4 year college degree or higher	365	2.3	695	3.4	1,223	5.0	2,038	6.5	5,498	12.1	10,870	16.8

Source: LSU, 1996.

Table 4-22. Educational attainment, Mobile County, 1940 to 1990.

	1940		1950		1960		1970		1980		1990	
	No.	%	No.	%	No.	%	No.	%	No.	%	No.	%
Persons 25 and older	77,688		124,735		156,448		160,718		200,918		232,254	
Finished 8th grade or less	46,073	59.3	63,035	50.5	63,191	40.4	54,202	33.7	39,220	19.5	25,046	10.8
Finished high school	11,813	15.2	23,476	18.8	39,296	25.1	43,792	27.2	69,871	34.8	75,114	32.3
Some college	3,105	4.0	7,155	5.7	11,083	7.1	12,675	7.9	29,075	14.5	51,722	22.3
4 year college degree or higher	2,468	3.2	4,550	3.6	8,914	5.7	12,072	7.5	24,926	12.4	36,078	15.5

Source: LSU, 1996.

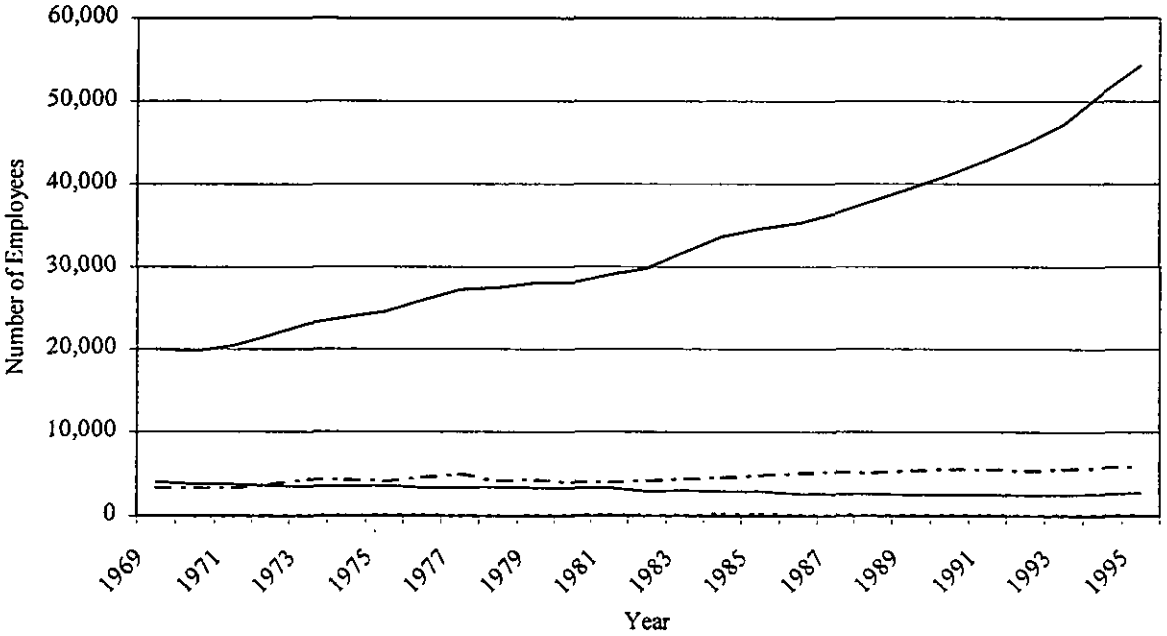

Figure 4-16. Employment in selected industries, Baldwin County, 1969 to 1995.

Source: U.S. DOC, BEA, REIS, 1998.

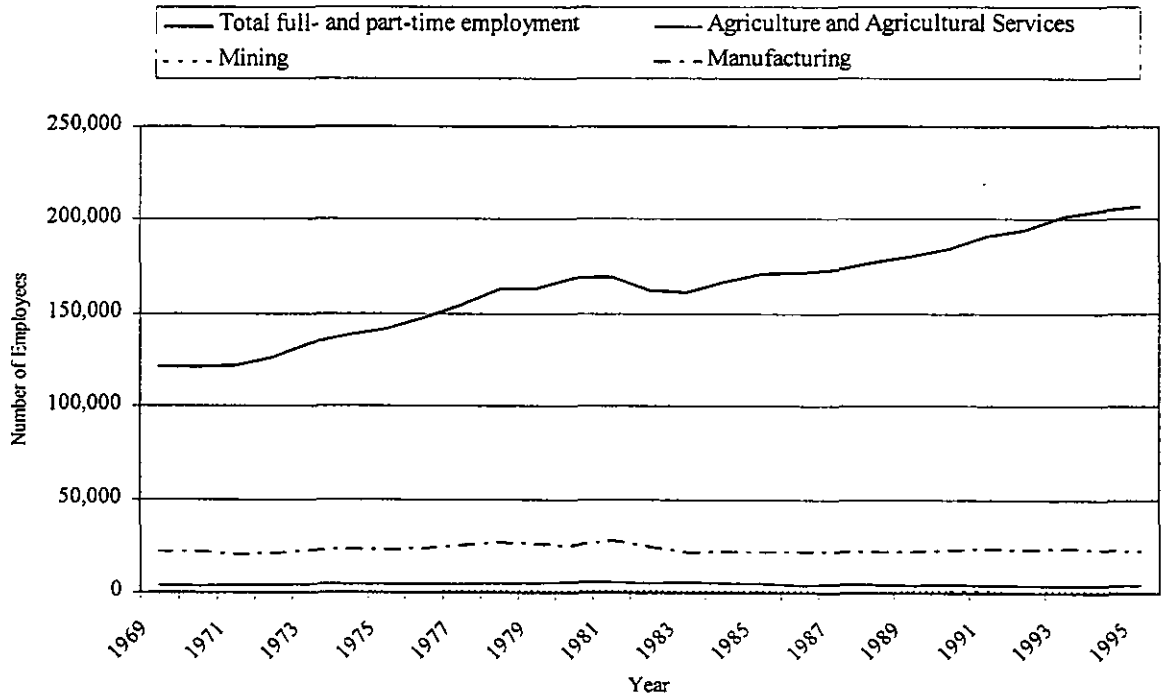

Figure 4-17. Employment in selected industries, Mobile County, 1969 to 1995.

Source: U.S. DOC, BEA, REIS, 1998.

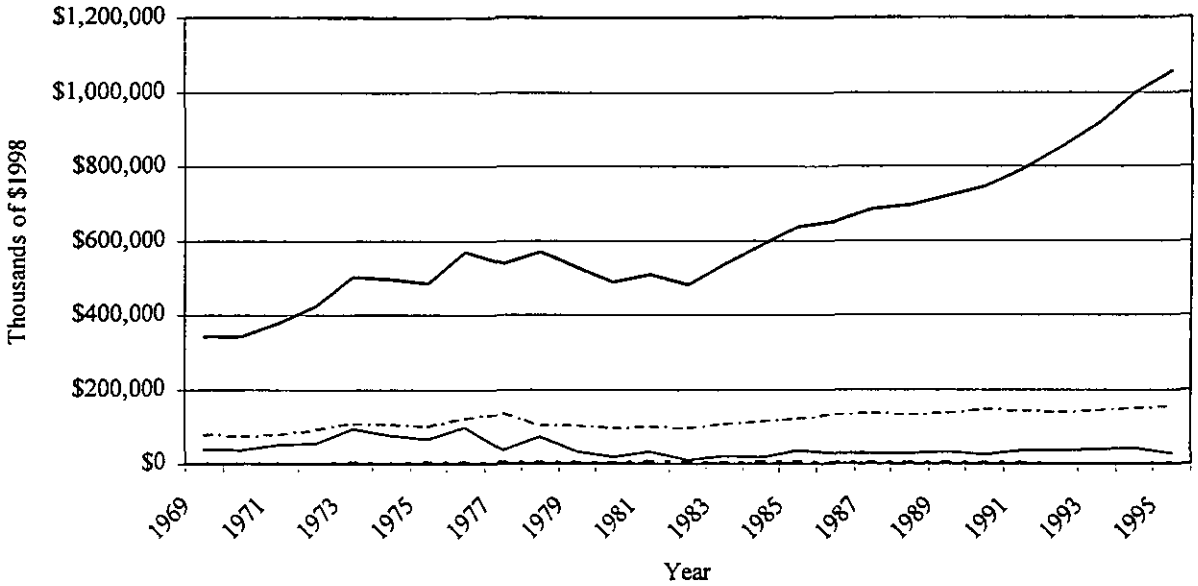

Figure 4-18. Earnings in selected industries, Baldwin County, 1969 to 1995.

Source: U.S. DOC, BEA, REIS, 1998.

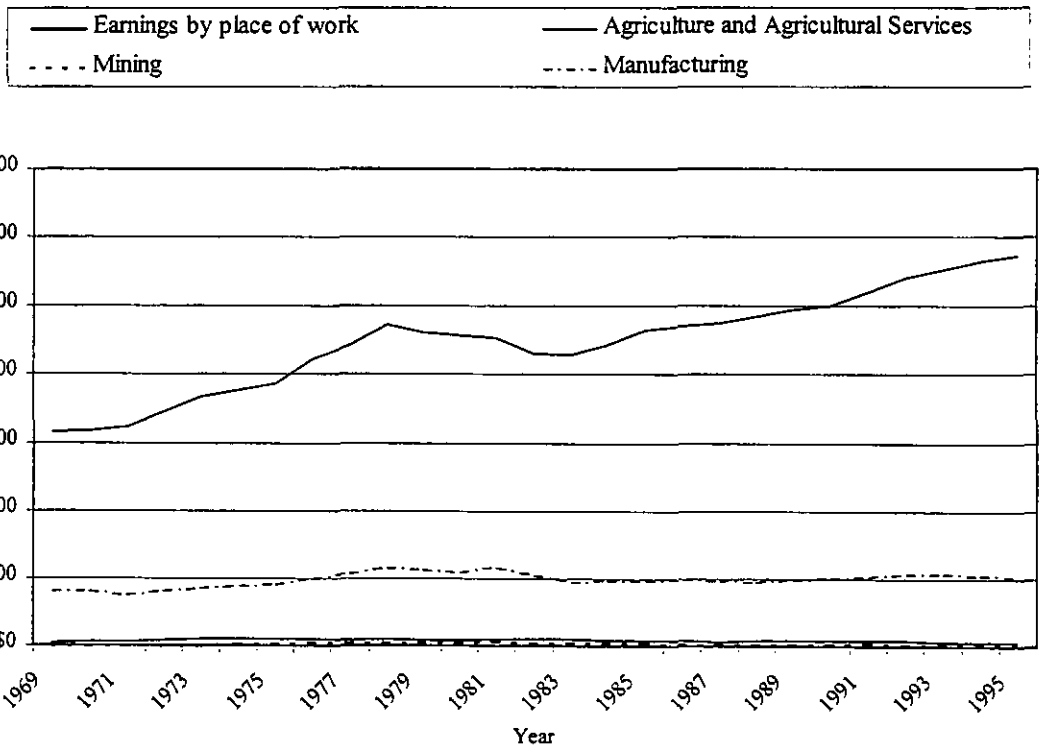

Figure 4-19. Earnings in selected industries, Mobile County, 1969 to 1995.

Source: U.S. DOC, BEA, REIS, 1998.

Mississippi, and the nation. The highest annual rate of change in employment occurred between 1987 and 1995 in Baldwin County (6.2 percent per year) and between 1969 and 1974 in Mobile County (2.8 percent per year). For earnings, the highest period of growth occurred between 1969 and 1974 in both counties, 8.7 percent per year in Baldwin County and 4.0 percent per year in Mobile County.

Despite the impressive employment figures, workers in Baldwin County have not benefited substantially from economic growth which has merely increased the number of low-wage jobs as the focus of the county's economy has shifted from industrial to service activities. This reflects the historic economic pattern in the South where economic change does not necessarily result in economic improvement. As sociologists William W. Falk and Thomas A. Lyson have indicated, most job growth in the South for minorities and women during the 1970's and 1980's involved "lateral" expansion (Falk and Lyson, 1988).

Agriculture and agricultural services have not been major sources of employment or earnings in either county since offshore oil and gas development has occurred. Baldwin County has more land in farms and farms than Mobile County, but agricultural employment and earnings are higher in Mobile County.

Similarly, mining employment and earnings are not significant in Baldwin or Mobile counties. (They barely show in Figures 4-16 and 4-17.) Until 1978, all of the mining earnings in Baldwin County came from oil and gas extraction. Since 1979, the proportion has dropped and has ranged from none to about half of mining earnings. Mining earnings in Baldwin County peaked at $8.1 million in 1985. In Mobile County, mining earnings peaked at $51.7 million in 1981, but none of the mining earnings were associated with oil and gas extraction until 1992. Mining employment has also been small in both counties over time. Peak mining employment in Baldwin County occurred in 1985 at 271. In Mobile County the peak occurred in 1981 at 1,362.

Manufacturing was a major source of employment in Baldwin and Mobile counties until about 1980. It was a major source of earnings in Baldwin County until about 1993 and in Mobile County as recently as 1995. Major manufacturing industries in Baldwin County include lumber and wood products, apparel and other textile products, and industrial machinery and equipment. Those in Mobile County include paper, and chemical and allied products.

Establishments in the sectors of interest and total establishments increased from 1977 to 1995. Annual average rate of change for total establishments was higher in Baldwin County (7.0 percent) than in Mobile County (2.1 percent), Alabama (2.6 percent), and the nation (2.8 percent).

Major sources of employment and earnings. The major sources of employment in Baldwin and Mobile counties have been somewhat similar in all the time periods examined. Since 1985 services, retail trade, and government have been the major sources of employment in both counties. Since 1990, these sectors, in the same order of importance, have been major sources of employment in the United States as well. In contrast, manufacturing, services, and government have been the major sources of employment in Alabama since about 1970. Manufacturing moved from the largest source to the second largest source of employment in the State in 1985.

Services, manufacturing, and government were the major sources of earnings in Mobile and Baldwin counties from 1969 to 1993. They continued as the major sources of earnings in Mobile County through 1995, although manufacturing was replaced by services as the top source of earnings in 1986. The same sectors were the major sources of earnings in Alabama and the United States between 1969 and 1995 as well. Retail trade replaced manufacturing as a major source of earnings in Baldwin County in 1993. Within the service sector, most of the earnings in Baldwin County since 1974 have been health services. Prior to 1974, it was hotel and other lodging places. Health services provided the largest share of service sector earnings in Mobile County between 1969 and 1995.

Military employment. Alabama had a larger proportion of military employees as a percent of government employees than the United States between 1969 and 1995. Mobile County had the largest absolute number of military employees of the five study area counties ranging from a low of 2,917 in 1978 to a high of 5,292 in 1993. These employees represented between about 12 percent of all government employees in the late 1970's and 1995 and about 20 percent in 1969. In 1995 there were about as many military employees in Mobile County as there had been in 1969. In the intervening years the number had gone through periods of increase (1969 to 1974; 1979 and 1980; and 1992 and 1993), decrease (1975 to 1978; 1986 to 1991; and 1994 and 1995), and relative stability (1982 to 1985). Military employment in Baldwin County was less than 1,000 from 1969 to 1995. Although the absolute number was greater in 1995 than 1969 (862 compared to 552), military employment represented a smaller proportion of government employment in 1995 in the county (11.2 percent) than in 1969 (20.6 percent).

Relationship between sector employment and OCS oil and gas indicators. Tables 4-23 and 4-24 show the relationship between sector employment and OCS oil production, oil value, natural gas production, natural gas value, and trend or year. For Baldwin County, only the trend in employment shows a consistent positive relationship for all but farming (which shows a negative relationship). OCS natural gas production shows a positive relationship with all but mining (which is neutral) and farming (which is negative). For Mobile County, the trend and OCS natural gas production showed a consistent positive relationship except for farming (negative) and manufacturing (neutral).

Table 4-23. Relationship between sector employment and OCS oil and gas indicators: Baldwin County.[1]

Sector	OCS Oil Production	OCS Oil Value	OCS Natural Gas Production	OCS Natural Gas Value	Trend or Year
Farm	0	+	-	0	-
Agriculture	0	-	+	+	+
Mining	0	0	0	0	+
Construction	0	-	+	0	+
Manufacturing	0	0	+	0	+
Transportation	0	-	+	0	+
Wholesale Trade	0	0	+	0	+
Retail Trade	0	-	+	0	+
FIRE	0	0	+	+	+
Services	0	-	+	0	+
Government	0	-	+	0	+

[1]Determined by examination of statistical results of linear regression of employment variables against oil or gas indicator and year. All estimates were corrected for 1st order autocorrelation when determined to exist.

Table 4-24. Relationship between sector employment and OCS oil and gas indicators: Mobile County.[1]

Sector	OCS Oil Production	OCS Oil Value	OCS Natural Gas Production	OCS Natural Gas Value	Trend or Year
Farm	-	+	-	0	-
Agriculture	0	0	+	0	+
Mining	0	0	+	+	+
Construction	0	0	+	0	+
Manufacturing	-	0	0	0	0
Transportation	0	0	+	0	+
Wholesale Trade	0	0	+	0	+
Retail Trade	0	-	+	0	+
FIRE	0	0	+	+	+
Services	0	-	+	0	+
Government	0	-	+	0	+

[1]Determined by examination of statistical results of linear regression of employment variables against oil or gas indicator and year. All estimates were corrected for 1st order autocorrelation when determined to exist.

4.5.3 Changes in Personal Economy

Mean household income. Total mean household income rose steadily in Baldwin County between 1970 and 1990, from $34,961 to $40,206. In contrast, mean household income in Mobile County peaked in 1980 at $39,500, was actually lower in 1990 than in 1970, and was lower in 1990 than that in Baldwin County. Mean household income in Mobile County for white and black residents was higher than that in Baldwin County in 1970, 1980, and 1990. In both counties in the 3 years of interest, mean household income for blacks was lower than for whites. This reflects a national trend dating from the post-World War II era of declining urban economic fortunes and the rise of relatively affluent suburban jurisdictions.

Per capita income and average wage per job. Per capita income in Baldwin County increased 78.9 percent between 1970 and 1995 (from $12,050 to $21,552), compared to 52.9 percent in Mobile County (from $12,525 to $19,153). The average wage per job was consistently higher in Mobile County than in Baldwin County. The average wage per job in Mobile County was generally close to that in the State. The average wage per job in Baldwin County between 1969 and 1995 fluctuated between a low of about $17,150 in 1969 and a high of $19,850 in 1977. It was about $19,300 in 1995. In 1990 and 1995, the average wage per job in Baldwin County was lower than the per capita income, an indication of the significance of the service sector in the economy which usually has lower paying jobs. In Mobile County, the average wage per job fluctuated between a low of about $24,800 in 1969 and a high of $27,150 in 1978. It was about $25,900 in 1995. The seeming anomaly in Baldwin County with rising per capita income and declining average wage per job reflects the economic facts of life in the service era. Most of the jobs in the service sector are low-paying and typically below that of industrial wages. And workers typically do not live in the upscale communities they serve. Again, this reflects the lateral movement of the Southern economy in some geographic areas.

4.5.4 Changes in a Social Indicator

Suicide rate. Suicides per 100,000 population in Baldwin and Mobile counties from 1969 to 1995 show wide variations. The variations are most noticeable in Baldwin County after 1974. The rate ranged from a high of 22.5 in 1989 to a low of 6.6 in 1971. The rates in Mobile County also swung up and down, but less so than in Baldwin County. The highest rate, 14.3, occurred in 1995; the lowest, 6.9, occurred in 1973. Suicide rates in Alabama and in the nation show less variation, and until about 1989 the rates in Alabama were consistently lower than those for the nation.

4.6 Structural Dependency on Gulf of Mexico OCS Oil and Gas Activities

It is evident from the available information that the economies of two of the study area counties -- Lafourche and Terrebonne parishes -- have been largely dependent upon Gulf of Mexico OCS crude oil and natural gas. The economy of San Patricio County also appears to have had a large dependency on oil and gas, at least, during some time periods. Available data do not support, however, a high level of economic dependence on Gulf of Mexico OCS oil and gas activities by Baldwin and Mobile counties, but OCS activities are relatively recent in those counties and the economies are larger and more diversified than the other study areas. The economies of the study areas appear to follow slightly different temporal patterns than those of Gulf of Mexico crude oil and natural gas. Between 1969 and 1974, the five study area counties experienced substantial economic growth. Baldwin County had the highest level as indicated by rates of change in major economic indicators (see Table 4-19). From 1974 through 1981, Lafourche and Terrebonne parishes and San Patricio County experienced large increases in income, total employment, and earnings. Baldwin and Mobile counties also experienced some growth between 1974 and 1981, but their growth was considerably lower than that obtained for the three other study area counties. Following the boom years (1974-1981), the economies of Lafourche and Terrebonne parishes, and San Patricio County substantially declined. The annual rates of change between 1981 and 1987 for population and seven major economic indicators were negative. In fact, earnings and employment for all industrial sectors, except some related to agriculture and government, are negative for all three counties. The economies of Baldwin and Mobile counties, however, continued to grow between 1981 and 1987. Since 1987, the economies of all the study area counties have experienced economic growth.

Examination of the economies of the study areas relative to oil and gas indicators reveals rather striking patterns. Between 1969 and 1974, the oil and gas industry experienced modest growth. The economies of Lafourche and Terrebonne parishes, and San Patricio County also experienced modest growth. From 1974 through 1981, however, the oil and gas industry experienced substantial growth in terms of prices and sales values. Crude production for the U.S. and from the Gulf of Mexico OCS, declined between 1974 and 1981. The price of Gulf of Mexico OCS crude increased at an annual rate of 27.8 percent; the price of Gulf of Mexico OCS natural gas increased at the rate of 58.1 percent. The sales value of Gulf of Mexico OCS crude and natural gas, respectively, increased at an annual rate of 5.0 and 85.4 percent. In Terrebonne Parish, personal income increased at the rate of 9.2 percent; total employment increased at an annual rate of 8.5 percent; and earnings by place of work increased by 10.9 percent per year. Lafourche Parish also exhibited growth between 1974 and 1981: (1) personal income increased at the rate of 7.1 percent; (2) total employment increased at an annual rate of 4.9 percent; and (3) earnings by place of work increased by 3.8 percent per year. Overall, the increased economic activity in Lafourche Parish between 1974 and 1981 was actually lower than it was between 1969 and 1974. San Patricio, Baldwin, and Mobile counties also experienced growth between 1974 and 1981, but the rate of growth was lower

than that obtained between 1969 and 1974. Alternatively, the available data do not support a large boom period for these three areas. The period 1981 to 1987 witnessed an overall decline in the OCS oil and gas industry that affected certain onshore communities. The available data strongly support a major downturn in economic activity between 1981 and 1987 for Lafourche and Terrebonne parishes and San Patricio County. The major economic indicators examined are negative and large in value (see Table 4-25 for a summary). Total employment between 1981 and 1987 decreased by 1.7 percent in Lafourche Parish, 4.3 percent in Terrebonne Parish, and 2.0 percent in San Patricio County. Earnings by place of work during the same time period decreased by 4.7 percent in Lafourche Parish, 6.8 percent in Terrebonne Parish, and 5.2 percent in San Patricio County. Personal income and per capita income also declined. In contrast to Lafourche and Terrebonne parishes, and San Patricio County, the economies of Baldwin and Mobile counties continued to grow during the bust period of 1981 to 1987.

Economic prosperity again returned to the study areas following the 1981 to 1987 downturn. Since 1987, personal income, earnings, and employment have increased for nearly all of the five study area counties. Average earnings per job, however, decreased in Terrebonne Parish. Mining, a high earnings sector, was replaced by services, a lower earnings sector in 1987. Wages and salaries paid per job decreased in Lafourche and Terrebonne parishes and, Mobile County between 1987 and 1995. Baldwin County experienced the largest gains in economic activity between 1987 and 1995.

The available information clearly supports four different patterns for Lafourche and Terrebonne parishes, and San Patricio County: 1969 to 1974- substantial expansion in economic activity; 1974 to 1981- sustained economic growth, with economic activity being even higher than it was between 1969 and 1974; 1981 to 1987 -- large contraction or downturn in economic activity frequently referred to as the "bust" years; and for all study areas 1987 to 1995 - recovery from the bust period and modest economic growth.

These patterns do not hold for Mobile and Baldwin counties. These counties experienced no actual declines in major indicators in any of the periods examined. Growth slowed significantly in Mobile County between 1981 and 1987, but never stopped or reversed itself. While Baldwin County experienced some slower growth in the "boom" times of 1974 to 1981, it has generally enjoyed robust growth since 1965.

Table 4-25. Annual rate of change: summary.

Variable/Time Period	Lafourche Parish	Terrebonne Parish	San Patricio County	Baldwin County	Mobile County
Population					
1969-1974	1.4	1.8	1.0	3.2	0.7
1974-1981	2.7	2.7	2.7	3.1	1.8
1981-1987	0.1	0.1	0.4	2.7	0.6
1987-1995	0.0	0.4	1.2	3.5	0.3
1969-1995	1.1	1.3	1.5	4.2	0.9
Personal Income					
1969-1974	7.1	6.5	6.3	8.8	4.7
1974-1981	7.1	9.2	5.8	4.2	3.4
1981-1987	-3.3	-3.8	-2.6	5.0	1.3
1987-1995	2.3	2.6	2.4	6.6	2.4
1969-1995	3.6	4.0	3.3	10.4	3.7
Per Capita Personal Income					
1969-1974	5.4	4.3	5.0	4.8	3.8
1974-1981	3.7	5.5	2.7	0.9	1.4
1981-1987	-3.4	-3.9	-2.9	2.0	0.7
1987-1995	2.3	2.2	1.1	2.4	2.0
1969-1995	2.0	2.0	1.3	3.0	2.2
Total Full and Part-Time Employment					
1969-1974	2.8	4.8	2.8	3.8	2.8
1974-1981	4.9	8.5	4.1	3.1	3.2
1981-1987	-1.7	-4.3	-2.0	4.3	0.4
1987-1995	1.9	2.3	2.1	6.2	2.4
1969-1995	2.2	2.8	2.0	6.6	2.7
Earnings by Place of Work					
1969-1974	6.6	7.6	6.7	8.7	4.0
1974-1981	3.8	10.9	3.2	0.5	2.9
1981-1987	-4.7	-6.8	-5.2	5.8	0.9
1987-1995	2.2	1.7	3.0	6.8	2.5
1969-1995	1.6	2.5	1.5	8.0	3.2

Table 4-25. Annual rate of change: summary (cont'd).

Average Earnings per Job					
1969-1974	3.3	2.2	3.3	4.1	1.0
1974-1981	-0.7	1.5	-0.8	-2.2	-0.2
1981-1987	-3.4	-3.3	-3.6	1.2	0.5
1987-1995	0.2	-0.5	0.8	0.5	0.1
1969-1995	-0.4	-0.2	-0.3	0.5	0.3
Mining Employment					
1969-1974	2.1	7.5	-0.2	10.9	29.2
1974-1981	1.3	10.3	19.6	54.2	29.6
1981-1987	-6.2	-7.7	-6.3	0.7	-7.2
1987-1995	-4.7	-1.1	-2.0	1.2	-1.0
1969-1995	-2.0	0.6	0.9	28.7	11.4
Wage and Salary per Job					
1969-1974	0.9	1.8	1.7	2.7	0.9
1974-1981	1.2	2.1	0.1	-0.8	-0.2
1981-1987	-2.3	-3.2	-2.2	0.7	0.4
1987-1995	-0.5	-0.6	0.9	0.1	-0.1
1969-1995	-0.2	-0.1	0.1	0.5	0.2

Source: Tables 4-6, 4-7, 4-14, 4-19, and 4-20.

5.0 OCS Oil and Gas Activities and the Social and Economic Structure of Gulf of Mexico Communities

5.1. Introduction

The potential importance of OCS oil and gas activities to the social and economic aspects or structures of numerous Gulf of Mexico communities has been extensively examined (e.g., Gramling 1984, 1995; Tolbert 1995). Most of the previous work, however, focused primarily upon assessing whether or not selected social and economic indicators likely changed in response to large-scale upturns or downturns (i.e., cyclic events) in OCS oil and gas activities (e.g., the 1974 to 1981 "boom" period and the 1981 to 1987 "bust" period). There appears to have been little analyses of whether or not these cyclic events had any substantial long-run impacts or promoted any long-run adjustment dynamics. Alternatively, there has been minimal work done by researchers on assessing the nature of the potential long-run influence of OCS oil and gas activities on the social and economic structures of the Gulf of Mexico communities, where long-run is defined as the amount of time sufficient to observe more permanent and stable changes in the social and economic structures of the Gulf of Mexico study areas. A formal definition of a long-run is the time period during which there is a systematic co-movement among social or economic variables which a social or economic structure or theory exemplifies precisely in the long run (Banerjee et al., 1993). A formal time-series definition of long run is the length of time over which changes in the value of a variable induces change in the value of another variable (Hamilton, 1994).

This section of the study presents the results of statistical analyses of the potential social and economic consequences of OCS oil and gas activities in the Gulf of Mexico region on the five study area counties and parishes.

The social and economic structures of the communities are typically loosely defined. A structure can infer an aggregate of numerous characteristics that describe the social and economic aspects of a community. For example, crime statistics on the rates of homicides, rapes, robberies, and drug arrests could be used to infer an overall crime assessment of a community. In studies on the social impacts of natural resource-dependent communities, the social structure typically refers to the nature of interactions between numerous social characteristics and industry indicators (Leistritz and Maki, 1981; Freudenburg, 1992; Landis, 1938). Similarly, economic analysis typically reviews several economic measures such as the consumer and wholesale price indexes, personal income, rate of inflation, and income distribution, and makes inferences about the stability of a structure.

The analytical results were derived from a wide array of quantitative analyses. The emphasis of these analyses was to determine whether or not there were statistically significant relationships between various social and economic indicators and OCS oil and gas activities. The analytical methods are discussed in detail in Appendix A.

Quantitative analyses require consistent time series data. Not all of the data sets for variables used to describe the study area counties in Section 4 met that criterion. Problems with some data sets -- inconsistent data, missing data, and inadequate time series -- render some of the variables used in Section 4 unsuitable for statistical analyses described in this section. Problems with data sets are common when analyzing long-term trends and social and economic relationships using a variety of variables. To overcome the problems, time series data from the U.S. Department of Commerce, Bureau of Economic Analysis, Regional Economic Information System (REIS) were used for the statistical analyses described in this section. This is a consistent data set for over 200 variables beginning in 1969. The REIS variables are those commonly used for social and economic characterization. The REIS data set contains some of the 55 variables originally proposed for study and proxy variables which are believed to contain similar informational content as the variables for which there was inadequate time series. For example, if oil refinery employment was of interest and appropriate data were not available, manufacturing employment might be used as a surrogate or proxy variable. Another commonly used proxy variable, particularly in education studies, is years of schooling as an indicator for years of education.

5.1.1 Major Findings

Many of the major conclusions or findings from the empirical analysis were expected or intuitive, particularly to individuals familiar with OCS oil and gas activities in the Gulf of Mexico region. These findings are, nevertheless, presented because they are supported by statistical analysis; are not necessarily intuitive to all individuals; and present results not stated in previous studies. Major findings or conclusions are as follows:

- Results of the analyses of the potential relationships between the social and economic indicators and Gulf of Mexico OCS oil and gas indicators indicate that OCS oil and gas activities have influenced the social and economic structures of the five study area counties and parishes. The social structure and economies of Lafourche and Terrebonne parishes and San Patricio County, however, have been the most dependent upon OCS oil and gas activities.

- In general, changes in the values of the variables selected to indicate statistical trends of the study areas' social and economic indicators closely followed changes in the values of the same variables at the United States level of aggregation (e.g., as the population of the United States increased between 1969 and 1995, so did the populations of the study areas). The closeness of the trends was strictly qualitative (i.e., trends in the values of the variables depicting local trends generally increased or decreased and so did trends in values of the variables depicting U.S. trends). On a strict mathematical and statistical basis, however, the trends for the study areas were not generally equivalent to those for the United States. Changes in the values

of the social and economic indicators for Mobile County most closely followed changes in the values of the same indicators for the United States.

- The influence of OCS oil and gas activities on the social structure and economies of the study areas has been very dynamic. Changes in the values of the variables used to indicate the social and economic structures have been highly erratic and unstable relative to changes on the variables used to indicate OCS oil and gas activities. Moreover, the influence of OCS oil and gas activities in a given year on the social and economic structures has typically been quite long in duration. Events which affected the OCS oil and gas activities in one period continued to influence the social and economic structures as long as 15 years into the future. After 7 years, however, the influence of OCS oil and gas activities on most of the social and economic indicators was approximately zero.

- There was widespread instability in the relationships between the social and economic structures and OCS oil and gas activities. The most significant instability occurred between 1969 and 1995. For the most part, however, the instability could be traced to events external to OCS oil and gas activities in the Gulf of Mexico (e.g., the Arab-Israeli war of 1973-74; the Iranian revolution of 1978-79; and Iraq's invasion of Kuwait in 1990).

- There is strong statistical evidence indicating significant relationships between OCS oil and gas activities during the "boom" and "bust" periods and the social and economic indicators. There is insufficient statistical evidence to indicate statistically significant and stable relationships between OCS oil and gas activities and the social and economic indicators in periods other than the "boom" and "bust" periods. That is, the relationships were changing in value and sign (i.e., positively or negatively correlated).

- There was no strong statistical evidence to support the notion of a long-run stable relationship between OCS oil and gas activities and the social and economic structures in the selected Gulf of Mexico study areas. The absence of a stable relationship, however, does not imply that OCS oil and gas activities have had no affect on the social and economic structures of the region. It instead implies that the relationship between OCS oil and gas activities and the social and economic structures has highly varied over time.

- Starting in 1989, the social and economic structures of all five study areas began to stabilize. After 1995, changes in the values of the social and economic indicators became relatively stable in response to changes in OCS oil and gas activities. During the late 1980's, the economies became more diversified and increasingly dependent upon services and government activities. The economies became less

dependent upon OCS oil and gas activities, agriculture, and manufacturing; industrial activities that are often associated with highly unstable economies.

- There was no evidence to support the notion that social programs were significantly influenced by OCS oil and gas activities. In fact, statistically significant relationships between variables reflecting social programs and OCS oil and gas indicators were often highly unstable and of an unexpected sign (e.g., Aid to Families with Dependent Children in Mobile County and Terrebonne Parish was positively correlated with the sales value of oil).

- There is no single oil or gas variable which adequately captures the Gulf of Mexico OCS oil and gas activities. Of six indicators selected for depicting OCS oil and gas activities -- OCS crude and condensate sales volume, gas sales volume, real (constant dollar value) price of crude and condensate, real price of natural gas, real value of crude and condensate sales value, and real value of natural gas sales value -- substantially, and often conflicting, different relationships were found to exist between the OCS oil and gas indicators and the social and economic indicators.

- Of all six potential indicators of oil and gas activities, the sales values for oil and condensate and natural gas were the most significant in terms of indicating linkages between OCS oil and gas activities and the social and economic structures of the study area. The economies of Lafourche and Terrebonne parishes in Louisiana and San Patricio County in Texas were closely related to changes in OCS oil and gas sales values. In general, population, personal income, per capital personal income, mining earnings, construction earnings, transportation and public utility earnings, health services earnings, government earnings, and total and full time employment increased as the value of OCS oil and natural gas increased. Changes in the economies of Lafourche and Terrebonne parishes were determined to be more closely related to changes in the sales value of natural gas than to changes in the sales value of crude and condensate.

- It is possible that OCS oil and gas activities have had a more significant influence on the social and economic structures of the study areas than ascertained by the analyses. The analyses sought to examine direct possible relationships between OCS oil and gas indicators and the social and economic indicators. The analyses did not examine potential linkages between social and economic indicators (e.g., a decrease in employment opportunities associated with reduce oil and gas production might reduce personal disposable income, which might, in turn, cause an increase in Aid for Families with Dependent Children).

5.1.2 Methodological Overview

This section presents a brief overview of the quantitative methods used to conduct the analysis. The analyses for this study began with a general statistical analysis of time-dependent or temporal trends of the various social and economic indicators and the Gulf of Mexico OCS oil and gas indicators. The general time series analysis was conducted to explore the potential nature of trends and the need for transforming data. A major problem with time-series regressions or the regression of a dependent variable against independent variables that are time series is the possibility of obtaining purely spurious results. For example, two data series -- one dependent and one independent -- may be completely unrelated but share a common time trend, and the data may have varying means and variances over time. A regression with such data has been shown in the statistical literature to often yield statistically significant results relating two variables even when there is no actual significant relationship. Moreover, Nelson and Plosser (1982) have shown that most time-series regressions involving social and macroeconomic data have been purely spurious (i.e., conventional statistical tests lead to the erroneous conclusion that there is a significant relationship when none exists). In this study, several forms of trends were considered: (1) linear; (2) quadratic; (3) polynomial of degree three; and (4) exponential. Since most analytical time-series methods involve linear trends and most macroeconomic data are non-stationary (i.e., mean and variance are changing over time), the analysis and results were limited to linear trends. Each of the various quantitative methods is briefly described in the following paragraphs; a more complete description of the analytical methods used to conduct the analysis is presented in Appendix A.

In the next phase of the analysis -- unit root testing -- alternative forms of trends were more rigorously examined (e.g., exponential and quadratic). Unit root tests were conducted to determine whether or not a trend was deterministic (completely predictable) or stochastic (trend is changing over time and is not easily predictable). More important, the unit root tests are necessary to ascertain whether or not trends in data can be eliminated with a simple deterministic detrending of the data or the trend must be eliminated using first-order differencing (e.g., $Y_t - Y_{t-1} = \beta + \varepsilon_t$, where β is a constant and ε is a stationary series with mean zero and constant variance). More formally, the unit root tests are necessary to determine whether or not data are stationary (i.e., constant mean and variance over time). If data are not stationary, conventional regressions may yield purely spurious statistical results.

Following the unit root and stationarity tests, co-integration analysis was done to determine whether or not study area trends in the social and economic indicators were the same as those for the United States. The co-integration analysis also was done to ascertain whether or not there were any constant and non-deviating trends between the U.S. and study area social and economic indicators (e.g., if a relationship is co-integrated, the trends of the U.S. will be the same as the trends for the study areas; shocks which cause

disruptions in the relationship will be short lived and both the U.S. and area trends will return to the same pattern over time).

More formally, co-integration is the case for which a dependent variable, y, and an independent variable, x, are not-stationary (i.e., have changing mean and variance over time), but can be made stationary after taking first differences (i.e., $Y_t - Y_{t-1} = \beta + \varepsilon_t$), and when linearly combined, form a linear combination that is stationary without any differencing (or simply, the regression equation, $y_t = \beta x_t + u_t$ makes sense because y and x do not drift too far apart from each other over time). Understanding the concept of co-integration is quite complicated. Consider the case of examining the possible relationship between household expenditures and personal disposable income for the United States. We would expect a regression of expenditures on personal income to yield a positive and statistically significant coefficient for personal income. What if, however, there was some common trend component that was responsible for the increase in expenditures and personal income. In this case, our results might be purely spurious. If we were to take first differences of our data series and include a trend component to our analysis, we might remove the influence of the common trend. If by taking first differences, each of the series was made stationary, the new series ($Y_t - Y_{t-1}$) would be integrated of order one. If a linear combination of two or more stationary series is integrated to order one unit lower than that required to make the series stationary, the series are said to be co-integrated. Moreover, there is a long-run equilibrium relationship between the series. Stated differently, regression and the existence of a long-run equilibrium require that a linear combination of the data (e.g., $y_t - \beta x_t$) must approximately equal zero. When the differenced series are stationary, they are said to be co-integrated; that is, each series is integrated of order zero, and there is some linear combination of the series which is integrated of an order one lower than the components (Banerjee et al., 1993).

Causality tests were next conducted to ascertain whether or not there were significant causal relationships among the study areas social and economic indicators and the Gulf of Mexico OCS oil and gas indicators. Formally, causality is defined as precedence (Leamer 1985). That is, do changes in one variable in a given time period cause changes in another variable at a future time period. An alternative definition, which is widely used in the statistical literature, is the cause of a variable varying independently of the other variables in a model. If a variable varies independently of changes in another variable in a model relating the two variables, there is no causality. Granger (1969) offers the most comprehensive explanation of causality. Granger causality is said to be absent when the conditional distribution (the regression model), lagged values of the variable being examined (the independent variables in a regression model) for causality add no information beyond that provided by lagged values of the dependent variable. In this study, Granger (1969) causality tests (F-tests) based on vector autoregression (VAR) models available in the statistical package "Time Series Processor, Version 4.3" (Hall, 1996) were used to determine if changes in the study areas' social and economic indicators were related to changes in the Gulf of Mexico OCS oil and gas indicators. The F-test is

widely used to statistically test linear restrictions on more than one coefficient (e.g., in a regression model $y_t = \beta_0 + \beta_1 x_{1t} + \beta_2 x_{2t} + u_t$, the F-test could be used to test whether or not β_1 and β_2 equaled zero or their sum equaled some value). Other tests which could be used to test multiple restrictions on coefficients are the likelihood ratio test, the Wald test, and the Lagrangean multiplier test.

The VAR models not only allow examination of causality, they also allow examination of dynamic stability via examination of impulse response functions. If a relationship is stable over time, than an unexplained event or shock that changes the value of one of the explanatory variables (e.g., interest rate) may change the value of the dependent variable under investigation (e.g., manufacturing employment) in the short run, but over some time period, the variable will return to its equilibrium value (the value of the dependent variables may be the same as before the change or different than the pre-change value; the return, however, will be predictable and exhibit little variation over time following the change and the influence of the change will no longer be present. To say that a relationship is stable over time is to state that it has an equilibrium path. That is, it is possible to predict what the value of the dependent variable will be in the long-run given short-run changes in the values of the variables believed to influence the value of the dependent variable.

Consider, for example, an analysis of the rate of growth of real output (change in log of Y between two consecutive tie periods) and its relationship to real prices (P) and the monetary supply (M). To examine for the presence of an equilibrium, a regression model is formulated that includes an error term. The error term may also be referred to as an innovation. It is desired to know how the rate of growth in real output will respond over time to a change in the error at a given time. That is, what might be the value of Y at some future point in time given a change an innovation now. If the relationship is stable, it is possible to predict the change in the rate of growth and the time it takes to return to the equilibrium.

The impulse response functions provide information about the length of time over which changes in the independent variables or random events affecting the independent variables affect the dependent variable (e.g., if world oil prices increase because of war in the Middle East, for how many years would domestic U.S. consumption of oil be affected?). The impulse response indicates whether or not a statistical relationship is also a stable equilibrium, and the time path for which the variable (e.g., the real rate of output growth) will return to an equilibrium value. An indication of a stable equilibrium is an impulse response value which declines in value the more time passes after the innovation. An impulse response function with explosive or highly variable values is an indication of an unstable equilibrium.

Last, structural change or stability tests were conducted to ascertain whether or not statistical relationships between the study areas social and economic indicators and the

Gulf of Mexico OCS oil and gas indicators were constant or stable over time. For example, a regression of manufacturing employment against the Gulf of Mexico OCS price of crude might indicate that manufacturing employment will increase by 0.01 individuals per $1.00 per barrel increase in the price of oil. It may be, however, that the statistical relationship is highly unstable or subject to change over time. For example, during some periods, the relationship between manufacturing employment and the price of oil may be positive; in other periods, the relationship may be negative; in some cases, there may be no statistically significant relationship; and finally, the value of the relationship also may be changing over time. Unfortunately, the statistical validity, particularly the statistical power, of stability tests are limited (i.e., it is possible to accept stability when the relationship is quite unstable). Because of potential problems with many statistical tests of stability, several tests were used in this study to examine structural change or model stability: (1) recursive residuals; (2) Brown et al. (1975) cusum and cusum-squared tests; and (3) Harvey and Collier's (1977) test. All three tests permit the determination of whether or not the value of the regression coefficients are changing over time and the determination of the time periods for which a relationship is constant or stable.

5.2 Gulf of Mexico OCS Oil and Gas Indicators and Trends

While there are many potential indicators of Gulf of Mexico OCS oil and gas activities, there does not appear to be any single oil or gas variable which depicts Gulf of Mexico OCS oil and gas activities. Moreover, oil and natural gas exploration, development, and production activities may occur during different periods of time, and thus, obfuscate the statistical relationships between the social and economic structures and these categories of Gulf of Mexico OCS oil and gas activities. Because of concerns to distinguish the possibility that the impacts associated with OCS oil activities might be different than those associated with OCS gas activities and the possibility that different indicators of oil and gas might be associated with different levels of impacts, the analysis was based on six possible indicators of OCS oil and gas: (1) Gulf of Mexico OCS crude and condensate sales volume; (2) Gulf of Mexico OCS gas sales volume; (3) the real price of Gulf of Mexico OCS crude and condensate; (4) the real price of Gulf of Mexico OCS natural gas; (5) the real value of Gulf of Mexico OCS crude and condensate sales value; and (6) the real value of Gulf of Mexico OCS natural gas sales value. Real prices and values were expressed in terms of 1998 constant dollars; the gross domestic implicit price deflator was used to convert nominal to constant dollar value. These six indicators are the same as those used in Section 3 to describe changes in the Gulf of Mexico OCS oil and gas industry.

As discussed in Section 4, four general periods of oil and gas activities were identified: (1) 1969 to 1973; (2) 1974 to 1981; (3) 1981 to 1987; and (4) 1987 to 1995. Between 1969 and 1973, the price of Gulf of Mexico OCS oil increased only 3.85 percent -- going from $12.74 in 1969 to $13.23 in 1973. The price of Gulf of Mexico OCS natural gas was

$0.73 per thousand cubic feet in 1969 and 1973. Between 1969 and 1973, the sales value of OCS crude and natural gas were quite stagnant or remained relatively constant. Similarly, prices were relatively constant. The years 1974 through 1981 are generally recognized as boom years in the oil and gas industry. During this period, the revenue received from the sale (in 1998 constant dollars) of Gulf of Mexico OCS oil and natural gas increased from $22.5 to $44.7 billion. The constant dollar price (1998 dollars) of OCS oil increased from $19.7 to $58.2 per barrel; the price per thousand cubic feet of OCS natural gas increased from $0.73 to $3.70. Between 1981 and 1987, OCS oil and gas activities took a major downturn; this period is frequently referred to as the "bust" years. Between 1981 and 1987, the total sales value of Gulf of Mexico oil and natural gas decreased from $44.7 to $21.8 billion. The prices of Gulf of Mexico OCS crude and natural gas declined, respectively, from $58.2 to $24.2 per barrel and from $3.70 to $2.48 per thousand cubic feet. The period 1987 to 1995 has been marked by modest growth in oil and gas activities.

5.2.1 Sales Volume of Gulf of Mexico Crude Oil

The volume of sales of Gulf of Mexico OCS crude oil did not closely track changes in the values of the social and economic indicators. For example, as sales volume decreased between 1974 and 1981, many of the economic indicators increased. Similarly, between 1981 and 1986, as crude oil sales volume increased, the value of many of the economic indicators decreased. During the pre-boom and post bust years, however, the trends and sales volume appear to match those of the economic indicators. (See Figure 3-11 for OCS crude oil and condensate sales volume for the OCS.)

Since 1989, the sales volume of Gulf of Mexico OCS crude oil has increased at an annual rate of 4.0 percent. Concurrently, employment in most of the non-agricultural sectors has also increased in most of the study area counties. Baldwin County has exhibited the greatest rate of growth in employment; in fact, Baldwin County experienced positive growth in all sectors since 1989. In comparison, San Patricio County experienced a 13.1 percent annual rate of increase in government employment between 1989 and 1995. In contrast to expectations, none of the counties or parishes has experienced much growth in the mining sector since 1989. In fact, three of the study area counties experienced decreases in mining sector employment: (1) Lafourche Parish (-6.1 percent); (2) Mobile County (-2.9 percent); and (3) San Patricio County (-2.1 percent). Since 1989, all study area counties, except San Patricio County, experienced employment growth in those sectors which are linked to oil production and distribution activities in the region: (1) construction; (2) manufacturing; and (3) transportation.

5.2.2 Sales Volume of Gulf of Mexico Natural Gas

In contrast to sales volume of Gulf of Mexico crude oil, the sales volume of Gulf of Mexico OCS natural gas generally increased at a decreasing rate between 1969 and 1995.

As indicated by a relatively low coefficient of variance (CV=10.7), however, the sales volume of natural gas between 1969 and 1995 exhibited relatively little variation. When examined relative to many of the economic indicators, particularly for Lafourche and Terrebonne parishes, there appears to be a strong direct, although highly variable, correspondence between 1969 and 1983. That is, the sales volume of Gulf of Mexico natural gas substantially increased between 1969 and 1981 and then declined between 1981 and 1983, and many of the economic indicators followed a similar pattern. (See Figure 3-14 for OCS natural gas sales volume for the OCS.)

5.2.3 Price of Gulf of Mexico Crude Oil

The real price received for Gulf of Mexico OCS crude oil and condensate widely varied, as indicated by a relatively high coefficient of variation (CV) of 49.1 percent. (See Figure 3-6.) The price levels did, however, closely coincide with the boom-bust years. The economic indicators did not closely track with the prices during the pre-boom and post-bust years. Between 1972 and 1981, the real price of Gulf of Mexico OCS crude oil rapidly increased as did the value of most of the economic indicators, particularly for Lafourche and Terrebonne parishes. Similarly, the real price of Gulf of Mexico OCS crude oil substantially declined between 1981 and 1987, and so did the values of many of the economic indicators. After 1986, however, there was no apparent correspondence between the real price of Gulf of Mexico OCS crude oil and the social and economic indicators.

5.2.4 Price of Gulf of Mexico Natural Gas

Similar to the real price of Gulf of Mexico OCS crude, the real price of Gulf of Mexico OCS natural gas widely varied (CV=54.3 percent) between 1969 and 1995. Between 1969 and 1974, the price was relatively constant. Between 1974 and 1982, the price increased by nearly 500 percent. The real price remained relatively unchanged between 1982 and 1985, but then declined by nearly 50 percent between 1985 and 1987. Since 1987, the real price of Gulf of Mexico OCS natural gas has declined at a relatively small rate of change. (See Figure 3-8.)

Wages, earnings, and employment increased for many of the business sectors between 1969 and 1981; in 1981, economic activity in most of the sectors reached a peak. During the 1969 to 1981 period, the real price of Gulf of Mexico OCS natural gas also substantially increased. The real price, however, did not peak until 1983. Between 1981 and 1987, the economic activity was declining in many of the business sectors in Lafourche and Terrebonne parishes; the real price of natural gas declined between 1983 and 1987. Over the 1969 to 1995 period, there were many inconsistencies between economic activity and the real price of Gulf of Mexico OCS natural gas. Since 1987, the real price has modestly decreased while the economic activity has generally increased.

5.2.5 Sales Value of Gulf of Mexico Crude Oil

The potential relationships between the social and economic indicators and Gulf of Mexico OCS sales value of crude oil appear to be evident only for the boom and bust periods. That is, the sales value and level of economic activity increased during boom periods and decreased during the bust periods. After 1987, there does not appear to be any apparent relationship between the social and economic indicators and the sales value of Gulf of Mexico OCS crude oil. (See Figure 3-5.)

5.2.6 Sales Value of Gulf of Mexico OCS Natural Gas

The trend in the sales value of Gulf of Mexico natural gas is nearly identical to the trend in the price of natural gas (the coefficient of variation equaled 60.4 percent). Between 1969 and 1987, changes in economic activity were similar to changes in Gulf of Mexico OCS sales value of natural gas. As the sales value of Gulf of Mexico OCS natural gas increased or decreased, so did the values of the economic indicators, particularly those for Lafourche and Terrebonne parishes. Since 1987, changes in most of the economic indicators have been in the opposite direction of changes in the sales value of Gulf of Mexico natural gas and appear to be unrelated to changes in OCS natural gas sales value. (See Figure 3-7.)

5.3 Gulf of Mexico OCS Oil and Gas Activities and the Social and Economic Structure

Analyses of the trends between OCS oil and gas activities in the Gulf of Mexico and the selected social and economic indicators suggest highly unstable relationships between OCS oil and gas activities and the social and economic structures of the study areas and several different trends in the relationships. Trends in the values of the economic indicators between 1974 and 1987 are consistent with trends which would occur during boom and bust periods. For example, this would include rising personal income during the boom years and declining income during the bust years. Results of the analyses, however, were suggestive of boom and bust periods for only Lafourche and Terrebonne parishes and San Patricio County. The boom and bust periods were not evident in the social and economic indicators of Baldwin and Mobile counties. More important, however, is that statistically significant relationships, when they existed, appeared to be highly unstable or changing over time. For some time periods, the relationships were positively correlated and statistically significant. In other time periods, the relationships were negatively correlated and statistically significant. For other time periods, the relationships were not statistically significant. In addition, the magnitudes or strengths of the possible relationships, when significant, were changing over time.

Possible reasons which might explain the instability in the relationships between the OCS oil and gas indicators and the social and economic indicators are changes in the temporal patterns of oil and gas exploration, oil and gas production, and the prices of oil and gas

over time. Exploration activities precede production activities but may follow changes in oil or gas prices. It is possible, however, that production activities may affect price levels. Changes in one aspect of oil and gas activities (e.g., price levels) may elicit a different social or economic response than does a change in another indicator of oil and gas activities (e.g., production). Moreover, exploration and production of OCS oil does not always coincide with exploration and production activities related to OCS natural gas. Changes in OCS oil activities typically occurred in different time periods than did changes in OCS natural gas activities. Changing temporal patterns could easily obfuscate possible relationships between a Gulf of Mexico OCS oil or gas indicator and area social and economic indicators.

Between 1954 and 1995, for example, the price level of OCS oil changed quite differently than did the price level for OCS natural gas. From 1954 through 1974, the annual real price of OCS oil was relatively unchanged; it then exponentially increased until 1981. Between 1981 and 1988, the price of OCS oil consistently declined; it then increased between 1988 and 1990. The real price of OCS oil then declined through 1995. The real price of Gulf of Mexico OCS natural gas had a considerably different pattern between 1954 and 1995. Between 1954 and 1958, the price of gas remained relatively constant. It then increased in 1959 but remained unchanged through 1974. The price of gas then exponentially increased between 1974 and 1985; after 1985, it declined until 1992. The real price of gas increased between 1992 and 1993 and then declined through 1995. Changes in either OCS oil or gas activities could be expected to have ramifications for the economies of the study areas. Moreover, changes in OCS oil activities could very well induce responses different than those which might occur for changes in OCS natural gas activities. Given that the impacts of changes in OCS oil activities might be different than those for OCS natural gas activities, and the fact that major changes for the two activities occurred in different time periods, statistical analyses could easily lead to incorrect conclusions about the relationship between the social and economic indicators and the OCS oil and gas indicators (e.g., one might conclude that decreased OCS oil activities was not associated with decreased personal income if personal income increased because OCS gas activities increased).

In general, Gulf of Mexico OCS oil and gas exploration, production, expansion, and contraction occur during different time periods (e.g., large contraction in Gulf of Mexico OCS production of crude and condensate and large expansion in production of Gulf of Mexico OCS natural gas between 1972 and 1981). It is evident from the data that the study area counties have responded differently to changing Gulf of Mexico OCS oil and gas opportunities over time. The trends in the data also suggest that, since 1987, the study area counties have adapted their economic and social structures to better deal with large changes in Gulf of Mexico OCS oil and gas activities or related economic influences (e.g., world price of oil). The large number of structural changes and the underlying dynamics of the changes substantially complicate the statistical analyses of the possible influences that the Gulf of Mexico OCS oil and gas activities may have had on the social and

economic structures of the study areas. Frequent or rapid structural changes tend to distort the possible statistical relationships. In some periods, relationships between OCS oil and gas indicators and the social and economic indicators were positively correlated (i.e., as the value of an oil or gas indicator increased or decreased, so did the value of a social or economic indicator). In other periods, the relationships were negatively correlated (i.e., as the value of an OCS oil or gas indicator increased or decreased, the value of a social or economic indicator decreased or increased) or did not exist. Moreover, the relationships changed in magnitude or value over time. When the strength or magnitude of a statistical relationships changes over time, it is possible to reject the existence of a significant statistical relationship or to erroneously conclude the existence of a long-run relationship.

5.4 Long-Run Trends Between the U.S. and Gulf of Mexico Study Areas

5.4.1 Social and Economic Change: 1969 to 1995

Statistical examination of the changes in the social and economic indicators between 1969 and 1995 reveal many interesting changes over time and differences between the study areas. In general, Florida has had the highest overall annual rate of economic growth since 1969 relative to the other Gulf of Mexico states (see Table 5-1). At the county level, Baldwin County has experienced the highest rate of economic growth relative to the four other study area counties.

One measure of economic growth that is widely used to describe the social and economic welfare or well-being of a community is personal income. The magnitude of personal income also provides a convenient measure of the scope or size of an area's economy. Changes in the level of personal income provide a convenient measure of economic stability or resource dependency. Large and frequent changes in the annual value of personal income is indicative of a community with little economic diversification or whose economy is driven mainly by one industry or one major firm. Communities whose economy primarily depends on a limited natural resource base tend to have highly varying levels of personal income on a year to year basis. Large and frequently varying changes in personal income can also be indicative of economies not dependent upon natural resources (e.g., personal income levels in an economy which is primarily driven by military spending tend to widely fluctuate over time). Other major and commonly used indicators of economic change and welfare include industry earnings and total full-time and part-time employment. Another measure of an area's social and economic well-being or welfare is the magnitude of transfer payments. Alternatively, transfer payments represent government payments for social welfare. If increases and decreases in Gulf of Mexico OCS oil and natural gas production and sales activities have positive and negative influences on the social and economic structures of the study areas, the relationships between OCS oil and gas activities and the social and economic indicators should be

Table 5-1. General trends in socioeconomic indicators (annual percentage change), 1969 to 1995.[1]

Indicator	Lafourche Parish	Terrebonne Parish	Louisiana	San Patricio County	Texas	Baldwin County	Mobile County	Alabama	Florida	Mississippi	United States
Population	1.08	0.31	0.75	1.54	2.68	4.22	0.92	0.95	4.37	0.82	1.17
Personal Income	3.61	3.98	3.42	3.32	6.07	10.42	3.67	4.60	8.65	4.06	3.50
Farm Income	-2.48	-2.92	-2.04	-2.09	-1.70	-2.11	0.40	-1.14	-1.08	-2.60	-2.10
Per Capita Person Income	-1.96	1.99	2.23	1.27	2.00	2.96	2.21	2.92	2.01	2.65	1.78
Earnings by Place of Work	1.63*	2.47*	2.21	1.51	5.19	7.98	3.16	3.33	6.57	2.66	2.60
Agri. Services, Forestry, Fishing, Other	-1.28	-0.89	1.87	0.11	5.73	1.56*	0.79	5.44	7.40	3.27	5.24
Mining	-1.29	0.99*	0.69*	1.04*	7.62	10.14*	12.82*	4.02*	0.02*	0.22*	1.64*
Oil and Gas Extraction	-1.29	1.18	0.74*	1.11*	7.82	1.74*	-3.62	-3.85*	-1.97*	0.25*	3.02*
Construction	-0.11*	0.89*	0.70*	-0.94	2.94	2.70	3.69	3.59	3.04	1.98*	1.59
Manufacturing	1.72*	0.91*	1.07*	1.05*	3.48	3.71	1.07	1.61*	2.76	2.31	0.39
Transportation and Public Utilities	2.45*	2.88*	1.37	-1.60	6.80	11.48	0.97*	3.92	5.60	3.88	2.46
Wholesale Trade	1.80	-0.25*	1.27*	-0.27*	4.42	8.86	3.09	3.79	7.36	2.77	2.94
Retail Trade	0.14*	2.58*	1.20	0.88*	3.39	11.00	2.10	2.84	5.19	2.11	1.64
Services	6.51	8.46	7.18	2.09	11.04	12.90	8.24	7.93	14.16	6.77	7.71
Services: Health Services	8.19	19.87	12.35	3.90	13.54	20.89	10.62	13.72	21.06	12.94	9.40
Government and Government Enterprises	3.54	4.16	2.29	9.75	3.96	11.46	4.14	2.77	5.25	2.58	2.33
Wage and Salary Disbursements	1.57*	2.60*	1.96	1.98	4.65	8.37	2.81	3.16	6.41	2.74	2.34
Average Earnings Per Job	-0.38	-0.21	0.11*	-0.31	0.45	0.51*	0.25*	0.61	0.10*	0.44	0.08*
Wage and Salary Earnings Per Job	-0.22	-0.13	-0.01*	0.07	0.34	0.48*	0.17*	0.53*	0.08*	0.39	0.05*
Net Earnings	1.83*	2.10*	2.04	1.85	4.97	8.16	2.46	3.07	6.32	2.58	2.42
Establishments Total	0.54*	1.76	1.81	0.62*	3.33	6.99	2.05	2.64	5.99	2.00	2.89
Agri. Services, Forestry, Fishing and Other	-3.16	1.18	3.66	1.11*	7.43	13.13	2.43	6.61	11.45	5.65	7.82
Mining	-1.15	1.88*	0.10*	0.79*	1.13*	16.67	5.56	-0.37*	0.14*	0.01*	-0.08*

Table 5-1. General trends in socioeconomic indicators (annual percentage change), 1969 to 1995.

Indicator	Lafourche Parish	Terrebonne Parish	Louisiana	San Patricio County	Texas	Baldwin County	Mobile County	Alabama	Florida	Mississippi	United States
Manufacturing	-0.74*	1.98	0.44	3.47	2.24	0.88	1.89	1.50	2.94	1.75	1.05
Employment Total Full and Part-Time	2.24	2.83	2.04	1.97	4.25	6.61	2.73	2.35	6.31	1.99	2.47
Wage and Salary Jobs	1.89	2.83	1.97	1.87	3.97	7.01	2.52	2.31	6.19	2.14	2.25
Farm	-2.26	-2.86	-1.91	-2.03	-0.49*	-2.11	-1.27	-1.79	-0.13*	-1.88	-0.97
Agri. Services, Forestry, Fishing, Other	2.89	6.09	5.97	3.43	11.41	4.11	4.21	8.94	9.98	6.27	9.73
Mining	-2.04	0.62*	0.01*	0.88*	3.52	28.67	11.39	1.76*	2.65	0.29*	0.80*
Construction	3.59	3.15	1.93	1.09*	4.04	11.71	4.89	4.20	4.36	2.53	2.82
Manufacturing	1.61*	0.33	0.26*	0.62*	1.54	2.75	0.09*	0.78	1.96	1.59	-0.25
Transportation and Public Utilities	1.84	2.11*	0.86	-1.41*	3.95	11.17	1.12	2.70	4.83	3.23	1.82
Wholesale Trade	1.15	0.60*	1.54	0.39*	3.38	8.66	2.39	3.17	6.01	3.03	2.66
Retail Trade	3.22	4.89	3.03	1.74	5.03	1305	3.54	4.44	7.17	3.74	3.37
Finance, Insurance, and Real Estate	4.09	4.91	2.46	3.09	5.59	12.85	2.72	3.30	6.89	3.07	3.34
Services	4.59	5.48	4.69	3.82	8.33	8.94	4.92	4.46	11.64	3.72	6.49
Government and Government Enterprises	3.22	3.39	1.56	7.11	3.01	7.18	2.42	1.38	3.65	1.29	1.41
Proprietors Total	-2.00	-2.25	-2.30	-2.36	-1.54	-1.62	-1.80	-2.30	-1.22	-2.61	-2.00
Nonfarm Proprietors	-1.74	-2.16	-2.01	-1.96	-1.10	-0.38	-1.69	-1.76	-1.03	-2.09	-1.67
Farm Proprietors	-3.27	-3.13	-3.26	-3.32	-2.88	-3.33	-3.09	-3.26	-2.99	-3.28	-3.14
Transfer Payments Total	18.22	20.49	11.78	15.11	14.43	18.59	11.52	12.29	18.18	11.76	9.51
Government Payments to Individuals	19.69	22.23	12.27	16.0	14.91	19.17	12.05	12.74	18.56	12.19	9.86
Medicare	63.97	100.59	42.48	31.97	31.66	52.53	36.32	38.99	40.92	30.48	21.67
Public Assistance Medical Care	151.95	217.12	64.50	61.90	63.07	76.10	70.97	66.92	194.94	160.21	27.12

Table 5-1. General trends in socioeconomic indicators (annual percentage change), 1969 to 1995.

Indicator	Lafourche Parish	Terrebonne Parish	Louisiana	San Patricio County	Texas	Baldwin County	Mobile County	Alabama	Florida	Mississippi	United States
Aid to Families with Dependent Children	2.16	1.42	0-.84	6.16	7.11	-0.20	0.37	-0.15	10.94	1.46	2.25*
Food Stamps	115.17	20.01	44.12	38.61	397.18	5.65	41.99	55.67	15599.92	14.25	74.82
Social Indicators Suicides per 100,000 Population	8.04	11.32	1.44	2.62*	0.49	2.94	3.12	1.54	0.05*	1.94	0.35*
Number of Serious Crimes Known to Police	-0.08	6.39	2.97	3.98	4.33	4.70	2.31	2.90	5.99	3.29	1.46

[1]An asterisk indicates the absence of a statistically significant, long-run, linear time trend. An absence of a statistically significant linear trend indicates that the variable does not consistently increase (or decrease) over time.

inversely related (e.g., if decreased OCS oil production decreases economic activities in an area, transfer payments would be expected to increase).

Since 1969, personal income in Florida increased at an average annual rate of 8.7 percent. Personal income in Texas, the state with the second highest average annual rate of growth, increased at an annual rate of 6.1 percent. Personal income for Alabama increased at the rate of 4.6 percent per year. Personal income for Mississippi increased at the rate of 4.1 percent per year. Louisiana had the lowest rate of increase in personal income -- 3.4 percent per year. Rankings for total earnings by place of work were the same as that for personal income. Rankings of total full and part-time employment were the same except Mississippi was last and Louisiana was next to last.

At the county level, the annual rate of increase in personal income was highest for Baldwin County. Terrebonne Parish had the second highest annual rate of increase in personal income. The rankings of the remaining study areas are as follows: Mobile County (3), Lafourche Parish (4), and San Patricio County (5). Rankings based on rate of change for total earnings are as follows: (1) Baldwin County, (2) Mobile County, (3) Terrebonne Parish, (4) Lafourche Parish, and (5) San Patricio County. The rankings for total full-time and part-time employment are as follows: (1) Baldwin County, (2) Terrebonne Parish, (3) Mobile County, (4) Lafourche Parish, and (5) San Patricio County.

In terms of social programs involving transfer payments, Florida had the highest annual rate of increase in total transfer payments; the high rate, however, is most likely because of the large number of resident retirees. The rankings of the other four states are as follows: Texas (2), Alabama (3), Louisiana (4), and Mississippi (5). Relative to the study areas, the highest annual rate of increase in transfer payments was in Terrebonne Parish. Baldwin County had the second highest level of transfer payments. Lafourche Parish and San Patricio and Mobile counties had the third, fourth, and fifth highest rate of increase in total transfer payments.

5.4.2 U.S. and Study Area Trends

In order to assess whether or not the trend for a given variable at the U.S. level is statistically identical to the trend for that variable at the study area level, Engle-Granger versions of cointegration tests were used. These tests allow determination of whether or not there is a long-run, stable, equilibrium relationship between two or more variables.

In a very general comparison, the social and economic trends for the study areas are similar to those for the United States (e.g., population increased in the United States and in all the study areas) between 1969 and 1995. On a strict statistical basis and as determined by cointegration analysis procedures, however, the trends are similar only for a limited number of social and economic indicators and study areas (see Table 5-2, which reports

Table 5-2. Long-run equilibrium elasticity between United States and study areas.

Indicator	Lafourche Parish	Terrebonne Parish	Louisiana	San Patricio County	Texas	Baldwin County	Mobile County	Alabama	Florida	Mississippi
Population	0	0	0	0	0	0	0	0	0	0
Personal Income	0	0	0	0	0	0	0	0	0	0
Farm Income	0	0	0	0	0	0	.14	0	0	0
Per Capita Person Income	0	0	0	0	0	0	0	0	0	0
Earnings by Place of Work	0	0	0	0	0	0	0	0	0	0
Wage and Salary Disbursements	0	0	0	0	0	0	0	0	0	0
Agri. Services, Forestry, Fishing, and Other	0	0	0	0	0	0	0	0	0	0
Mining	0	0	0	0	0	0	0	0	0	0
Oil and Gas Extraction	0	0	0	0	0	0	0	0	0	.70
Construction	0	0	0	0	0	0	0	0	0	0
Manufacturing	0	0	0	0	0	0	0	0	0	0
Transportation and Public Utilities	0	0	0	0	0	0	0	0	0	0
Wholesale Trade	0	0	0	0	0	0	0	0	0	0
Retail Trade	0	0	0	0	0	0	0	0	0	0
Services	0	0	0	0	0	0	0	0	0	0
Services: Health Services	0	0	0	0	0	0	0	0	0	0
Government and Government Enterprises	0	0	0	0	0	0	0	0	0	0
Wage and Salary Disbursement	0	0	0	0	0	0	0	0	0	0
Average Earnings Per Job	0	0	0	0	0	0	0	.58	0	0
Wage and Salary Earnings Per Job	0	0	0	0	1.00	0	0	0	0	0
Net Earnings	0	0	0	0	0	0	0	0	0	0

Table 5-2. Long-run equilibrium elasticity between United States and study areas (cont'd).

Indicator	Lafourche Parish	Terrebonne Parish	Louisiana	San Patricio County	Texas	Baldwin County	Mobile County	Alabama	Florida	Mississippi
Establishments										
Total	0	0	0	0	0	0	0	0	0	0
Agri.Services, Forestry, Fishing and Other	0	0	0	0	0	0	0	0	0	0
Mining	0	0	0	0	0	0	0	0	0	0
Manufacturing	0	0	0	0	0	0	0	0	0	0
Employment										
Total Full and Part-Time	0	0	0	0	0	0	0	0	0	0
Wage and Salary	0	0	0	0	0	0	0	0	2.02	0
Farm	0	0	0	0	0	0	1.09	0	0	0
Agri. Services, Forestry, Fisheries, and Other	0	0	0	0	0	0	0	0	0	0
Mining	0	0	0	0	0	0	0	0	0	0
Construction	0	0	0	0	0	0	0	1.07	0	0
Manufacturing	0	0	0	.45	0	0	0	0	0	0
Transportation and Utilities	0	0	0	0	0	0	0	0	0	0
Wholesale Trade	0	0	0	0	0	0	0	0	0	0
Retail Trade	0	0	0	0	0	0	0	0	0	0
Fire, Insurance, and Real Estate	0	0	0	0	0	0	0	0	0	0
Services	0	0	0	0	0	0	.81	.80	0	0
Government and Government Enterprises	0	0	0	0	0	0	0	0	0	0

Table 5-2. Long-run equilibrium elasticity between United States and study areas (cont'd).

Indicator	Lafourche Parish	Terrebonne Parish	Louisiana	San Patricio County	Texas	Baldwin County	Mobile County	Alabama	Florida	Mississippi
Proprietors										
Total	0	0	0	0	0	0	0	0	0	0
Nonfarm	0	0	0	0	0	0	0	0	0	0
Farm	0	0	0	0	0	0	1.0	0	0	0
Transfer Payments										
Total	0	0	0	0	0	0	0	0	0	0
Government Payments to Individuals	0	0	0	0	0	0	1.10	0	0	0
Medicare	0	0	0	0	0	0	1.26	0	0	0
Public Assistance Medical Care	0	0	0	0	0	0	0	0	0	0
Aid to Families with Dependent Children	0	0	0	0	0	0	.90	0	0	0
Food Stamps	0	0	0	.54	0	0	.80	0	0	0
Social Indicators										
Suicides Per 100,000 Population	0	0	0	0	0	0	0	0	0	0
Number of Serious Crimes Known to Police	0	0	0	2.10	0	0	0	0	0	0

Source: Based on co-integration analysis between local valued variables and U.S. valued variables. Acceptance of co-integration implies that there is one common trend between the U.S. and locality. Acceptance of co-integration also implies a stable, long-run relationship between the variables and an equilibrium trajectory path. Since the data are examined in natural logs, the long-run relationship, if it exists, is an elasticity between the United States and the geographic study area. A zero in the table indicates that there is no common trend between the U.S. and the locality and cointegration is rejected. If data series are cointegrated, a shock to the system implies a permanent change; if the data are not cointegrated, a shock to the system implies that the shock goes progressively to zero over time. Cointegration between U.S. and local valued variables also implies that long-run shocks to the system are most likely coming from outside the region (e.g., an increase in the world oil price). Cointegration does not imply, however, that local shocks have no affect on variables reflecting local activities. It may be simply concluded that for an extended period with no exogenous shocks, the local valued variables would return to the same trend as that depicted by the U.S. valued variables.

the trends in terms of elasticities -- percentage change in value of variable for study area for 1 percent change in value of same variable for the United States).

Overall, very few states exhibited social and economic trends statistically similar to those of the United States. At the state level, Alabama actually had the largest number of similar trends (i.e., construction employment, service sector employment, and average earnings per job). Louisiana shared no common trends with those characterizing the United States.

Relative to the counties, only Mobile County had any substantial number of trends similar to those exhibited for the United States. In fact, the trends in the social and economic variables for Mobile County were more like those of the United States than were the trends for any of the other counties or parishes or any of the states.

Relative to population, income, and earnings by sector, none of the study areas exhibited trends that were statistically identical to that of the United States. The rejection of identical trends in population, income, and earnings also characterized employment by type and sector except for Mobile and San Patricio counties. Mobile County had the same trend in farm and service sector employment as that exhibited by the U.S. San Patricio County exhibited the same trend in manufacturing employment as that of the U.S. Mobile County also had the same trends in total transfer payments, government payments to individuals, Medicare payments, Aid to Families with Dependent Children, and food stamp expenditures as those of the United States. San Patricio County displayed the same trends in food stamp expenditures and number of serious crimes known to police as those exhibited by the United States.

Overall, it is concluded that the temporal trends between the social and economic structures of the United States and the Gulf of Mexico study communities are considerably different. Shared or common trends between the U.S. and study areas were found for the following variables and study areas: (1) San Patricio–manufacturing employment, food stamp payments, and number of serious crimes known to police; (2) Mobile County–farm income, farm employment, service sector employment, government payments to individuals, medicare payments, aid to families with dependent children, and food stamp expenditures; (3) Alabama–average earnings per job, construction employment, and service sector employment; (4) Florida–wage and salary employment; and (5) Mississippi–oil and gas extraction earnings. There are only a few deterministic (perfectly predictable and nonstochastic) trends in the U.S. and Gulf of Mexico region variables. Nearly all variables follow a stochastic trend. The stochastic trends and the absence of cointegration indicate that the social and economic characteristics of the study area counties are, in general, quite different from those of the United States.

Given the absence of cointegration or long-run, stable relationships between U.S. and state and study county trends, it is concluded that unexpected changes in variables affecting the

United States will have considerably different effects on the social and economic structures of the Gulf of Mexico study areas. Stated differently, changes which affect the social and economic structure of the United States may induce considerably different impacts on the social and economic structures of the Gulf of Mexico areas.

5.4.3 Long-run Stable Relationships: OCS Oil and Gas and the Social and Economic Structures

The possibility of long-run, stable equilibrium relationships between OCS oil and gas activities and the variables which depict the social and economic characteristics of the Gulf of Mexico study areas was assessed by conducting cointegration tests between the social and economic indicators and the six OCS oil and gas indicators: (1) sales volume of Gulf of Mexico OCS crude and condensate; (2) sales volume of Gulf of Mexico OCS natural gas; (3) the real price (price in 1998 terms) of Gulf of Mexico OCS crude and condensate; (4) the real price of Gulf of Mexico OCS natural gas; (5) the real sales value of Gulf of Mexico OCS crude and condensate; and (6) the real sales value of Gulf of Mexico OCS natural gas. Thus, six sets of cointegrating tests or tests for the presence of a long-run, stable, equilibrium relationship between OCS oil and gas and each social and economic indicator were conducted for each variable of interest.

Overall and relative to all five study area counties and five study area states, there was no statistical evidence to support a stable, long-run relationship between Gulf of Mexico OCS oil and gas activities and the social and economic structures, as depicted by the social and economic indicators, of the study area counties and states. For each variable listed in Table 5-2, Engle-Granger versions of cointegration tests between that variable and the six Gulf of Mexico OCS oil and gas indicators could not be accepted (that is, it cannot be concluded that there is a long-run, stable, equilibrium relationship between the variable and one of the Gulf of Mexico OCS oil and gas indicators). Since the presence of cointegration could not be accepted for any variable, the statistical results are omitted from this section.

The absence of a stable, long-run relationship is not surprising, however, given the significant changes in Gulf of Mexico OCS oil and gas activities over time. In fact, studies on economic equilibrium relationships have demonstrated that oil and gas prices and production are factors that typically destabilize an equilibrium (e.g., see Hamilton 1983, 1985; Johansen and Juselius, 1992). Moreover, changes over time in the social and economic structures of the study area counties would likely result in different responses to changes in Gulf of Mexico OCS oil and gas activities. Long-run, stable, equilibrium relationships between the social and economic structures and Gulf of Mexico OCS oil and gas activities should not be expected. The absence of a long-run stable relationship does not imply, though, that Gulf of Mexico OCS activities have not affected the social and economic structures of the study area counties. It simply implies that the social and economic structures (social and economic indicators in Table 5-2) may respond differently

to changes in Gulf of Mexico OCS oil and gas activities over time and subsequently follow a new temporary temporal relationship.

5.5 Causality: Social and Economic Structures and Gulf of Mexico OCS Oil and Gas Activities

Although the analysis found no long-run, stable, equilibrium relationships between OCS oil and gas activities in the Gulf of Mexico region and various social and economic indicators, it is possible that there are many short-run or transitory effects (e.g., an unexpected increase in OCS crude and condensate prices may have caused an increase in service sector employment, but the increase lasted for only a few years). Alternatively, there are long-run relationships, but the relationships are highly unstable, dynamic, and changing over time. For example, the statistical relationship between per capita personal income and the real value of OCS natural gas was statistically significant and positive. Between 1969 and 1972, the relationship declined in value; in 1973 and 1974, the strength of the relationship increased in value; from 1975 through 1985, the strength of the relationship substantially declined; after 1985, however, the value or strength of the relationship remained relatively unchanged. Between 1974 and 1985, the values of the recursive coefficients (regression parameters estimated using different time series) consistently declined in value; thus, indicating that as the real value of OCS natural gas increased, the per capita personal income also increased, but at a decreasing rate. It also is quite possible that even though two or more series are cointegrated, there may be numerous short-run or transitory changes over time. For example, farm employment in Mobile County had a similar trend to that of the United States between 1969 and 1995 (the long-run elasticity equaled 1.09 between the U.S. and Mobile County). During that period, however, the trends or patterns frequently changed, but they subsequently returned to the same patterns after major changes. Alternatively, transitory changes may cause rejection of co-integration even though two series are actually co-integrated.

Assessing the possibility of short-run or non-constant, time-dependent changes requires first an examination of causality (i.e., do changes in X cause changes in Y) and subsequently an evaluation of impulse response functions. The concept of causality is confusing to many people. In one case, causality refers to whether or not a variable may be considered as an exogenous or independent variable in a regression relationship. The more common and widely used concept is, however, that of whether or not changes in the value of one variable at a given point in time influence changes in the value of another variable at some later point in time (Granger, 1969). That is, does event A precede event B or are they contemporaneous. Impulse response functions provide an indication of how an unexpected unit change or shock in a variable at some given point in time will affect or change the same variable or another variable at some later point in time (e.g., if 2 years age the OCS price of crude and condensate increased by $1.00, what would be the expected change in oil and gas earnings in the current time period?). Causality testing and the derivation and examination of impulse response values are accomplished by estimating

vector autoregression (VAR) models. Causality is tested with the F-statistic of restrictions consistent with no causality--block exogeneity tests (Granger, 1969; Sims, 1972; Engle et al., 1983; Chamberlain, 1982; Pratt and Schlaifer, 1984; and Leamer, 1985). The F-test is commonly used to test values of more than one regression parameter (e.g., the value of two coefficients is zero or the linear combination of two or more variables equals some fixed value). Most statistical programs include an F-test routine for examining causality. Other tests include the likelihood ratio test, the Wald test, and the Lagrangean multiplier test. Impulse response functions are evaluated relative to 15 years. The valuation of the impulse responses and dynamics, however, are restricted to mean values (e.g., over the 1969 to 1995 period, what was the mean or average relationship between the social and economic indicator and the Gulf of Mexico OCS oil or gas indicator?).

5.5.1 Gulf of Mexico OCS Oil and Gas Production and the Social and Economic Structures

A critical concern of the current study is how Gulf of Mexico OCS oil and gas activities have affected the social and economic structures of the study area counties. In terms of sales volume of crude oil and natural gas, there is little statistical evidence to support a strong causal relationship between Gulf of Mexico OCS oil and natural gas production and the social and economic indicators between the years 1969 and 1995. There was significant statistical evidence, however, to conclude that the values of the social and economic indicators for Lafourche and Terrebonne parishes did change as the values of the OCS oil and gas indicators changed. Changes in the values of the social and economic indicators were not always consistent with expectations about how OCS oil and gas activities might influence the social and economic structures of the two parishes. Statistical tests of causality were unable to reject the null hypothesis of no causality (i.e., the sales volume of Gulf of Mexico OCS oil or gas did not cause changes in the social and economic indicators). (See Table 5-3).

There was, however, limited statistical support for some causal relationships. First, there was a finding that as Gulf of Mexico OCS natural gas production increased, so did the populations of Lafourche and Terrebonne parishes. There was a negative relationship between Gulf of Mexico OCS oil production and the population of Terrebonne Parish (e.g., as oil production increased, the population decreased); although the inverse relationship is a seemingly unexpected relationship, it is consistent with the data. There also was a positive and significant long-run, although highly unstable, relationship between Gulf of Mexico OCS natural gas production and earnings in the mining and oil and gas extraction sectors in Lafourche and Terrebonne parishes (i.e., the mathematical value or intensity of the relationship changed over time). Wage and salary earnings per job were also found to be related to Gulf of Mexico OCS crude oil production in both Louisiana parishes.

Table 5-3. Causality: oil and gas production.

Indicator	Lafourche Parish		Terrebonne Parish		San Patricio County		Baldwin County		Mobile County	
	Oil	Gas	Oil	Gas	Oil	Gas	Oil	Gas	Oil	Gas
Population	0	+	-	+	0	0	0	0	0	0
Personal Income	0	0	0	0	0	0	0	0	0	0
Farm Income	0	-	0	0	0	0	0	0	0	0
Per Capita Income	0	0	0	0	0	0	0	0	0	0
Earnings by Place of Work	0	0	0	0	0	0	0	0	0	0
Agri. Services, Forestry, Fishing and Other	0	0	0	0	0	0	0	0	0	0
Mining	0	+	0	-	0	0	0	0	0	+
Oil and Gas Extraction	0	+	0	+	0	0	0	0	0	+
Construction	0	0	0	0	0	0	0	0	0	0
Manufacturing	0	0	0	0	0	0	0	0	0	0
Transportation and Public Utilities	0	0	0	0	+	0	0	0	0	0
Wholesale Trade	0	0	0	0	0	0	0	0	0	0
Retail Trade	0	0	0	0	0	0	0	0	0	0
Services	-	0	0	0	-	+	0	-	0	0
Services: Health Services	0	0	0	0	0	0	0	-	0	0
Government and Government Enterprises	0	0	-	+	0	0	0	-	0	0
Wage and Salary Disbursement	0	0	0	0	0	0	0	0	0	0
Average Earnings Per Job	0	0	+	0	0	0	0	0	0	0
Wage and Salary Earnings Per Job	+	0	+	0	0	0	0	0	0	0
Net Earnings	0	0	0	0	0	0	0	0	0	0
Establishments Total	0	+	0	+	0	0	0	0	0	0
Agri. Services, Forestry, Fishing and Other	0	0	+	0	0	0	0	0	0	0
Mining	0	0	0	0	0	0	0	0	0	0
Manufacturing	0	0	0	0	0	0	0	0	0	0

Table 5-3. Causality: oil and gas production (cont'd).

Indicator	Lafourche Parish		Terrebonne Parish		San Patricio County		Baldwin County		Mobile County	
	Oil	Gas	Oil	Gas	Oil	Gas	Oil	Gas	Oil	Gas
Employment										
Total Full and Part-Time	0	0	0	0	0	0	0	0	0	0
Wage and Salary Jobs	0	0	0	0	-	0	0	0	0	0
Farm	0	-	-	0	-	0	0	0	0	0
Agri. Services, Forestry, Fishing, and Other	0	-	0	0	0	0	0	0	0	0
Mining	0	+	0	0	0	0	0	0	0	0
Construction	0	0	-	0	0	0	0	0	0	0
Manufacturing	0	0	0	0	0	0	0	0	0	0
Transportation and Public Utilities	0	0	0	0	0	0	0	0	0	0
Wholesale Trade	0	0	0	0	0	0	0	0	0	0
Retail Trade	0	0	0	0	0	0	0	0	0	0
Fire, Insurance, and Real Estate	0	0	0	0	0	0	0	+	0	0
Services	0	0	0	0	0	0	0	0	0	0
Government and Government Enterprises	0	0	0	-	0	0	0	0	0	0
Proprietors										
Total	0	-	0	+	0	0	0	0	0	0
Nonfarm	+	-	0	+	0	0	0	-	0	0
Farm	0	-	0	0	0	0	0	0	0	0
Transfer Payments										
Total	+	0	0	0	0	0	0	0	0	0
Government Payments to Individuals	+	0	0	0	0	0	0	0	0	0
Medicare	0	0	0	0	0	0	0	0	0	0
Public Assistance Medical Care	0	0	0	0	0	0	0	0	0	0
Aid to Families with Dependent Children	-	+	0	+	0	0	0	0	0	0
Food Stamps	0	+	0	0	0	0	0	0	0	0
Social Indicators										
Suicides Per 100,000 Population	0	0	0	0	0	0	0	0	0	0
Number of Serious Crimes Known to Police	0	0	0	0	0	0	0	0	0	0

In terms of employment and either Gulf of Mexico OCS oil or gas production, only nine potential linkages were found: (1) Baldwin County – fire, insurance, and real estate were statistically and positively linked to natural gas production; (2) Lafourche Parish – farm and agricultural services, forestry, fisheries, and other sector employment were statistically and negatively related to natural gas production; (3) Lafourche Parish – mining sector employment was statistically and positively related to natural gas production; (4) Terrebonne Parish – farm, construction, and government employment were statistically and negatively related to Gulf of Mexico OCS oil production; and (5) San Patricio County – wage and salary and farm employment were negatively related to Gulf of Mexico OCS oil production.

In terms of public assistance programs, number of suicides, and number of serious crimes known to police, there was minimal statistical evidence to support the hypotheses of a relationship between the indicators and Gulf of Mexico OCS oil or gas production. Relative to suicides and number of crimes, all statistical tests of causality were unable to reject the null hypothesis of no relationship. There was evidence, however, to support a relationship between public assistance programs and OCS oil or gas production in both Lafourche and Terrebonne parishes: (1) Lafourche -- total transfer payments and government payments to individuals were found to increase as Gulf of Mexico OCS oil production increased; (2) Lafourche -- payments for Aid to Families with Dependent Children were found to decrease as oil production increased and increase as gas production increased; (3) Lafourche -- food stamp expenditures were positively related (positive correlation) to Gulf of Mexico OCS natural gas production; and (4) Terrebonne -- expenditures for Aid to Families with Dependent Children were determined to statistically increase as Gulf of Mexico OCS natural gas production increased. Reasons for the possible linkages, however, are unknown.

5.5.2 Gulf of Mexico OCS Oil and Gas Prices and the Social and Economic Structures

Results of the causality tests for the majority of potential relationships between the social and economic indicators of the five study area counties and the prices of Gulf of Mexico OCS crude oil and natural gas did not reject the null hypothesis of no relationships (i.e., no causality was found for most of the social and economic indicators) for the 1969 to 1995 time period. Relative to the five study area counties, the social and economic indicators of Lafourche and Terrebonne parishes were found to have the most statistically significant relationships to Gulf of Mexico OCS oil and gas prices (see Table 5-4). That is, as the real prices of OCS oil and gas changed during a given period of time, the values of the social and economic indicators for Lafourche and Terrebonne parishes also changed over time. Alternatively, changes in real price of OCS oil and gas were determined to precede changes in the social and economic indicators for the two Louisiana study parishes, and the order of change was statistically significant.

Table 5-4. Causality: oil and gas prices.

Indicator	Lafourche Parish		Terrebonne Parish		San Patricio County		Baldwin County		Mobile County	
	Oil	Gas	Oil	Gas	Oil	Gas	Oil	Gas	Oil	Gas
Population	0	0	+	0	0	+	-	0	0	0
Personal Income	-	+	0	0	0	-	0	0	0	0
Farm Income	0	0	0	0	0	0	0	0	0	+
Per Capita Income	0	-	0	0	0	0	0	0	0	0
Earnings by Place of Work	0	-	0	0	0	0	0	0	0	0
Agri. Services, Forestry, Fishing and Other	0	0	0	0	0	0	0	0	0	0
Mining	+	0	-	0	+	+	0	0	0	+
Oil and Gas Extraction	+	0	0	0	+	+	0	0	0	+
Construction	0	0	+	+	0	0	0	0	0	0
Manufacturing	0	0	0	0	0	0	0	0	0	0
Transportation and Public Utilities	0	0	0	+	0	0	0	0	0	0
Wholesale Trade	0	0	0	0	0	0	0	0	0	0
Retail Trade	0	0	0	0	+	0	0	0	0	0
Services	0	0	0	0	0	0	+	+	0	0
Services: Health Services	0	0	0	0	+	0	0	-	0	0
Government and Government Enterprises	+	0	0	0	0	-	0	0	0	0
Wage and Salary Disbursement	0	0	0	0	0	0	0	0	0	0
Average Earnings Per Job	0	0	0	0	0	0	0	0	0	0
Wage and Salary Earnings Per Job	0	-	0	0	0	0	0	0	0	0
Net Earnings	0	0	0	0	0	0	0	0	0	0
Establishments Total	0	0	0	0	0	0	0	0	0	0
Agri. Services, Forestry, Fishing and Other	0	0	0	0	0	0	0	0	0	0
Mining	+	+	+	+	+	0	0	+	0	0
Manufacturing	+	+	+	0	0	0	0	0	0	0

Table 5-4. Causality: oil and gas prices (cont'd).

Indicator	Lafourche Parish		Terrebonne Parish		San Patricio County		Baldwin County		Mobile County	
	Oil	Gas	Oil	Gas	Oil	Gas	Oil	Gas	Oil	Gas
Employment										
Total Full and Part-Time	0	0	0	-	0	0	0	0	0	0
Wage and Salary Jobs	-	0	0	0	0	0	0	0	0	0
Farm	0	+	0	+	0	0	0	0	0	0
Agri. Services, Forestry, Fishing and Other	0	0	0	0	0	0	0	0	0	0
Mining	+	0	-	0	+	+	0	0	0	0
Construction	0	0	0	+	0	0	0	0	0	0
Manufacturing	0	0	-	0	-	0	0	0	0	0
Transportation and Public Utilities	0	0	0	+	0	0	0	0	0	0
Wholesale Trade	0	0	0	0	0	0	0	0	0	0
Retail Trade	0	0	0	0	0	0	0	0	0	0
Fire, Insurance, and Real Estate	0	0	+	0	0	0	0	+	0	0
Services	0	0	0	0	0	+	0	+	0	0
Government and Government Enterprises	0	0	0	-	0	-	0	0	0	0
Proprietors										
Total	0	0	0	-	0	0	0	0	0	0
Nonfarm	0	0	0	-	0	0	0	0	0	0
Farm	+	+	+	0	0	0	0	0	0	0
Transfer Payments										
Total	0	0	0	0	0	0	0	0	0	0
Government Payments to Individuals	0	0	0	0	0	0	0	0	0	0
Medicare	0	0	0	0	0	0	0	0	0	+
Public Assistance Medical Care	0	0	0	0	0	0	0	0	0	0
Aid to Families with Dependent Children	+	+	+	+	0	0	0	0	0	0
Food Stamps	+	0	+	0	0	0	0	0	0	0
Social Indicators										
Suicides Per 100,000 Population	0	0	0	0	0	0	0	0	0	0
Number of Serious Crimes Known to Police	0	0	0	0	0	0	0	0	0	0

The population of Terrebonne Parish was determined to be statistically related to previous changes in the price of Gulf of Mexico OCS crude oil and condensate (i.e., as prices increased or decreased in one year, the population increased or decreased in the next or following years). The population of Baldwin County was inversely or negatively related to the price of Gulf of Mexico OCS crude oil and condensate. Relative to the price of Gulf of Mexico OCS natural gas, only San Patricio County's population changed as gas prices changed; the population increased or decreased in years following increases or decreases in the price of Gulf of Mexico OCS natural gas.

The personal income of only two study area counties was determined to be related or caused by oil and gas prices: (1) Lafourche Parish, and (2) San Patricio County. Personal income in Lafourche Parish decreased as the price of Gulf of Mexico OCS crude oil and condensate increased but increased or decreased as the price of natural gas increased or decreased. Personal income for San Patricio County decreased as the price of natural gas increased. The dynamics of the demographics for San Patricio County, however, make it difficult to accurately assess possible linkages between the social and economic indicators and the OCS oil and gas indicators. During the study period, San Patricio County became an increasingly military populated area. In turn, government activities became highly important relative to the social and economic structures. Prior to 1991, military employment was approximately 250 individuals per year. Between 1991 and 1996, military employment increased by approximately 202 percent per year.

5.5.3 Gulf of Mexico OCS Oil and Gas Sales Value and the Social and Economic Structures

A considerably different story emerged when causality was examined using sales values of Gulf of Mexico OCS crude oil and natural gas. Unlike the causality results using Gulf of Mexico OCS oil and gas sales volume and prices, the use of sales value provided evidence of significant economic dependency on Gulf of Mexico OCS oil and gas activities by Lafourche and Terrebonne parishes and San Patricio County. That is, the economies of these three study counties or parishes did appear to be strongly linked to the sales values of OCS oil and natural gas.

Based on causality tests and at the 5-percent level of significance, there is considerable statistical evidence to demonstrate that the economies of Lafourche and Terrebonne parishes, and San Patricio County are strongly linked to Gulf of Mexico OCS oil and gas activities (see Table 5-5). The more significant linkages are positive (i.e., as the sales value increases, so do the values of the economic indicators) and related to the sales value of Gulf of Mexico OCS natural gas. For example, as the sales value of Gulf of Mexico OCS natural gas increases, the following economic indicators can be expected to increase in Terrebonne Parish: (1) population, (2) personal income, (3) per capita personal income, (4) mining earnings, (5) construction earnings, (6) transportation and public utility earnings, (7) health services earnings, (8) government earnings, (9) total full and part-time

Table 5-5. Causality: oil and gas revenues.

Indicator	Lafourche Parish		Terrebonne Parish		San Patricio County		Baldwin County		Mobile County	
	Oil	Gas	Oil	Gas	Oil	Gas	Oil	Gas	Oil	Gas
Population	0	+	+	+	0	+	-	-	0	0
Personal Income	-	+	0	+	0	+	0	0	0	0
Farm Income	0	0	0	0	0	0	0	0	0	0
Per Capita Income	0	+	0	+	0	+	0	0	0	-
Earnings by Place of Work	0	0	0	0	0	0	0	0	0	0
Agri. Services, Forestry, Fishing and Other	-	0	+	0	-	0	0	0	0	0
Mining	+	+	+	+	0	+	+	0	0	0
Oil and Gas Extraction	+	+	+	+	0	+	+	0	0	0
Construction	0	0	0	+	0	0	-	0	-	0
Manufacturing	0	+	0	0	+	0	0	0	0	0
Transportation and Public Utilities	-	0	0	+	0	0	0	0	0	0
Wholesale Trade	0	0	0	0	0	0	0	-	0	0
Retail Trade	0	0	0	0	0	0	0	0	0	0
Services	0	0	0	0	0	0	+	+	0	0
Services: Health Services	0	+	0	+	+	0	0	-	0	0
Government and Government Enterprises	+	0	+	+	+	-	0	-	0	0
Wage and Salary Disbursement	-	0	0	0	0	0	0	0	-	0
Average Earnings Per Job	0	0	0	0	0	0	0	0	0	0
Wage and Salary Earnings Per Job	0	-	0	0	0	0	0	0	0	0
Net Earnings	0	0	0	0	0	0	0	0	-	0
Establishments Total	0	0	0	0	0	0	0	0	0	0
Agri. Services, Forestry, Fisihing and Other	0	0	+	0	0	0	0	0	0	0
Mining	+	+	+	+	0	0	0	+	+	0
Manufacturing	+	+	+	0	+	+	0	0	0	0

Table 5-5. Causality: oil and gas revenues (cont'd).

Indicator	Lafourche Parish		Terrebonne Parish		San Patricio County		Baldwin County		Mobile County	
	Oil	Gas	Oil	Gas	Oil	Gas	Oil	Gas	Oil	Gas
Employment										
Total Full and Part-Time	0	-	+	+	0	0	0	0	-	0
Wage and Salary Jobs	-	0	+	+	0	0	0	0	-	0
Farm	+	0	0	0	0	0	0	0	0	0
Agri. Services, Forestry, Fishing and Other	+	+	-	0	-	+	0	0	0	0
Mining	0	+	0	-	+	+	0	0	0	0
Construction	0	0	0	0	0	0	-	0	-	0
Manufacturing	0	+	+	0	+	0	0	0	0	0
Transportation and Public Utilities	0	0	0	+	0	+	-	-	-	-
Wholesale Trade	-	0	0	0	0	0	0	0	0	0
Retail Trade	0	0	0	0	0	+	0	0	0	0
Fire, Insurance, and Real Estate	0	0	+	0	0	0	0	-	0	0
Services	0	0	-	0	0	+	0	+	0	-
Government and Government Enterprises	0	0	+	+	0	-	0	0	0	0
Proprietors										
Total	0	-	0	-	0	0	0	0	0	0
Nonfarm	0	-	0	-	0	0	0	-	0	0
Farm	+	+	+	0	0	0	0	0	0	0
Transfer Payments										
Total	+	0	+	0	0	0	0	0	0	0
Government Payments to Individuals	+	0	+	0	0	0	0	0	0	0
Medicare	0	0	0	0	0	0	0	0	-	0
Public Assistance Medical Care	0	0	0	0	0	0	0	0	0	0
Aid to Families with Dependent Children	0	+	+	+	0	0	0	0	+	0
Food Stamps	+	+	0	0	0	0	-	0	0	0
Social Indicators										
Suicides Per 100,000 Population	0	-	0	0	0	0	0	0	0	0
Number of Serious Crimes Known to Police	0	-	0	0	0	0	0	0	0	0

employment, (10) number of wage and salary jobs, (11) employment in transportation and public utilities, (12) employment in government enterprises, and (13) expenditures on Aid to Families with Dependent Children.

The economy of Lafourche Parish also appears to have many strong linkages to the sales value of Gulf of Mexico OCS crude oil and natural gas. For Lafourche Parish, there are positive and statistically significant relationships (i.e., as the sales value increases, so do the values of the economic indicators) between the sales value of crude oil and such social and economic indicators as government earnings; farm sector employment; employment in agriculture, forestry, fishing, and other; number of farm proprietors; and expenditures on food stamps. Negative causal relationships were found to exist between the sales value of Gulf of Mexico OCS crude oil and such indicators as personal income, wage and salary disbursement, and wholesale trade employment. This was an unexpected result since personal income and wage and salary levels would be expected to increase as the sales value of OCS crude increased if the economy of Lafourche Parish were highly dependent upon OCS oil activities. Relative to the sales value of natural gas, statistically significant and positive relationships were found to exist between the sales value and population; personal income; per capita income; mining earnings, oil and gas extraction, manufacturing, and health service earnings; employment in agricultural services; mining and manufacturing employment; number of farm proprietors; the number of mining and manufacturing establishments; expenditures on Aid to Families with Dependent Children; and food stamp expenditures. A statistically significant negative causal relationship was found between the sales value of natural gas and total full and part-time employment in Lafourche Parish; the negative relationship may be explained by the central tendency of the data. From 1981 through 1995, there was a strong inverse or negative relationship between the sales value of natural gas and total full and part-time employment. The strong inverse relationship may dominate any positive relationships, and thus, distort the statistical precision of the estimates.

The economy of San Patricio County also appeared to be linked or related to Gulf of Mexico OCS sales values for crude oil and natural gas. The economy of San Patricio County, however, has also been affected by the expansion of military facilities and personnel in county. Statistically significant and positive causal relationships were found for the following indicators: (1) the sales value of crude and manufacturing earnings, government earnings, health service earnings, mining sector employment, and manufacturing employment and establishments; and (2) the sales value of natural gas and population, personal income, per capita income, mining earnings, oil and gas extraction earnings, employment in agricultural services, mining employment, transportation employment, retail trade employment, and service sector employment. Negative causal relationships were determined to characterize the following indicators: (1) sales value of crude oil and employment and earnings in agricultural services, forestry, and other; and (2) the sales value of natural gas and government sector employment and earnings.

A few statistically significant relationships were found to characterize the relationships between sales values and the social and economic indicators for Baldwin and Mobile counties. Most of the relationships, however, were negative. Baldwin County did have some positive relationships: (1) sales value of crude and mining earnings, oil and gas extraction earnings, and service sector earnings; and (2) sales value of natural gas and service sector earnings and employment.

Few statistically significant relationships were found to exist between various social programs and the sales values of Gulf of Mexico OCS crude and natural gas. Aid to Families with Dependent Children was found to increase as the sales value of oil increased in Mobile County and Terrebonne Parish; it also increased as the sales value of natural gas increased in Lafourche and Terrebonne parishes. Food stamp expenditures were found to be positively affected by oil and gas sales values in Lafourche Parish. No relationships between the number of suicides and number of serious crimes known to police and the sales values of oil or gas were found to exist.

5.5.4 Gulf of Mexico OCS Oil and Gas and the Social and Economic Structures

In general, there is sufficient statistical evidence to conclude that Gulf of Mexico OCS oil and gas are important to the economies of all five study area counties. The study areas with an apparent high economic dependency on Gulf of Mexico OCS oil and gas are Lafourche and Terrebonne parishes and San Patricio County. Baldwin and Mobile counties exhibited some economic dependency on Gulf of Mexico OCS oil and gas activities between 1969 and 1995, but the dependency was relatively minor compared to the other three study areas. Given the large number of statistically significant and positive relationships between the economic indicators and the sales values of Gulf of Mexico OCS oil and gas, it is highly likely that small and abrupt changes affecting prices or production would have potentially large and significant impacts on the economies of Lafourche and Terrebonne parishes and San Patricio County, and the impacts would be felt for many years.

Concurrently, the dependency may be even greater than determined by the causal analysis. No analyses of possible relationships between the economic indicators were conducted (e.g., the relationship between the sales value of natural gas and total full and part-time employment and the possible relationship between earnings by place of work and total full and part-time employment).

The causality analyses suggest that oil and gas sales volumes and prices are not particularly good indicators of Gulf of Mexico OCS oil and gas activities. There were few statistically significant relationships between the social and economic indicators and sales volume or prices. Sales value appeared to be a more appropriate indicator of the potential importance of Gulf of Mexico OCS oil and gas activities in the region.

Although not summarized in the preceding text, values for the impulse response functions indicated that the influence of Gulf of Mexico OCS oil and gas on the social and economic indicators of the study areas has been highly erratic and long-lived. That is, as the OCS oil and gas indicators changed in value between consecutive periods of time, the social and economic indicators also not only changed in value between consecutive time periods but also in future time periods. The values of these changes, however, were highly variable (e.g., a one unit change in the real price of OCS natural gas in one period was associated with personal income increasing by $796,755.2 in the next period; seven periods later, however, that one unit increase in the real price of OCS natural gas was associated with a decrease of $7,463,974 in total personal income. Dynamic stability was rejected for all social and economic indicators except population. Rejection of dynamic stability implies the absence of an equilibrium time path. That is, if some event shocks or changes sales volume, prices, or sales value, the social and economic indicator will not return to an equilibrium value even after a long period of stable oil and gas activities. Instead, the values of the social and economic indicators become explosive, highly erratic, and seek new unexpected time paths (i.e., the values of the response functions change in sign or value relative to returning to an equilibrium; an equilibrium is possible when the values of the impulse response functions die out towards zero in value over time). The absence of dynamic stability and the likelihood that the relationships between Gulf of Mexico OCS oil and gas activities and the social and economic indicators were changing between 1969 and 1995 likely limited the causality statistical tests' results. In terms of the length of time of effects, it was determined that events which affected Gulf of Mexico OCS oil and gas activities as many as 9 to 15 years in the past still influence current values of the social and economic indicators; by 7 years, however, most effects will decrease to extremely low levels.

5.6 Structural Stability and Gulf of Mexico OCS Oil and Gas Activities

This section presents results of analyses of changing relationships over time. Detailed analyses of changes of the structural relationships (i.e., the value and sign of the regression coefficient relating the value of a social or economic indicator to the value of an OCS oil or gas indicator) indicated that the relationships between the social and economic indicators and the OCS oil and gas indicators were highly variable or changing between 1969 and 1995. Most the variation or change occurred between 1969 and 1971, 1971 and 1981, and 1982 and 1988; after 1988, the value or strength of the relationships between many of the social and economic indicators and the OCS oil and gas indicators was relatively constant.

An important issue for assessing the potential linkages between oil and gas activities and the social and economic characteristics is whether or not the temporal patterns and Gulf of Mexico OCS oil and gas/social and economic structural relationships are stable over time. The causality analysis and valuation of impulse response functions indicated that the possible relationships between Gulf of Mexico OCS oil and gas activities and the social and economic structures (social and economic indicators) were highly unstable. The

assessment of stability for this study was accomplished using several tests: (1) Brown et al.'s (1975) cusum and cusum-squared tests; (2) Harvey and Collier's (1977) test, and (3) Harvey and Phillips (1974) test. All four tests allow an assessment of whether or not the relationship between variables is changing over time.

The notion of changing relationships is illustrated by examining the recursive coefficients (estimated regression parameters obtained using observations pertaining to different periods of time in the regression) relating total full and part-time employment in Lafourche Parish to year. Figure 5-1 depicts the values of the estimated coefficients obtained from a regression of employment on year for various periods of time. The value of the coefficient is not constant. Between 1969 and 1971, the trend is negative. The number of observations required to estimate any regression equation must be at least equal to the number of parameters being estimated (e.g., in the regression relating employment to year, two observations are required). As a consequence, it is not possible to estimate a relationship for only 1969 or any single year. Figure 5-1 thus commences with 1970. The relationship then becomes positive and reaches a maximum valued in 1981. After 1981 and through 1990, the coefficient, although still positive, declines in value. From 1990 through 1995, the trend in employment is relatively constant or stable.

What are the implications of structural instability? If estimates of a relationship between two or more variables are statistically unstable, it is not possible to use those estimates to assess the potential responses of one variable to changes in other variables over all observations. Structural instability implies that the relationship between variables is changing or is not constant. Forecasts, predictions, and conclusions will be highly imprecise. Without explicit recognition of events or factors causing changes in relationships, conclusions based on the estimates may be invalid or highly imprecise. Also, if a relationship is highly unstable, statistical results of a regression may be highly misleading (e.g., it may be concluded that two variables are unrelated even though they are related or two variables are statistically related even though they are not related).

The presence of instability, however, may indicate periods of interventions or changes in structural relationships over time. For example, the relationship between the U.S. demand for gasoline and the price of gasoline dramatically changed in 1974 with the Arab oil embargo. In addition, the Suez crisis of 1956-57, the Arab-Israeli war of 1973-74, the Iranian revolution of 1978-79, the start of the Iran-Iraq war in 1980, and Iraq's invasion of Kuwait in 1990 all influenced or altered the relationship between the demand for fuel and the price of gasoline. Instability could also have been induced by a wide array of industry changes. Advances in oil drilling and recovery technology could cause instability. Changes in the level of training of oil or gas company employees could induce relationships to be unstable. Any of the events described in Table 2-1 of Section 2 for the offshore oil and gas industry could contribute to relationships being statistically unstable.

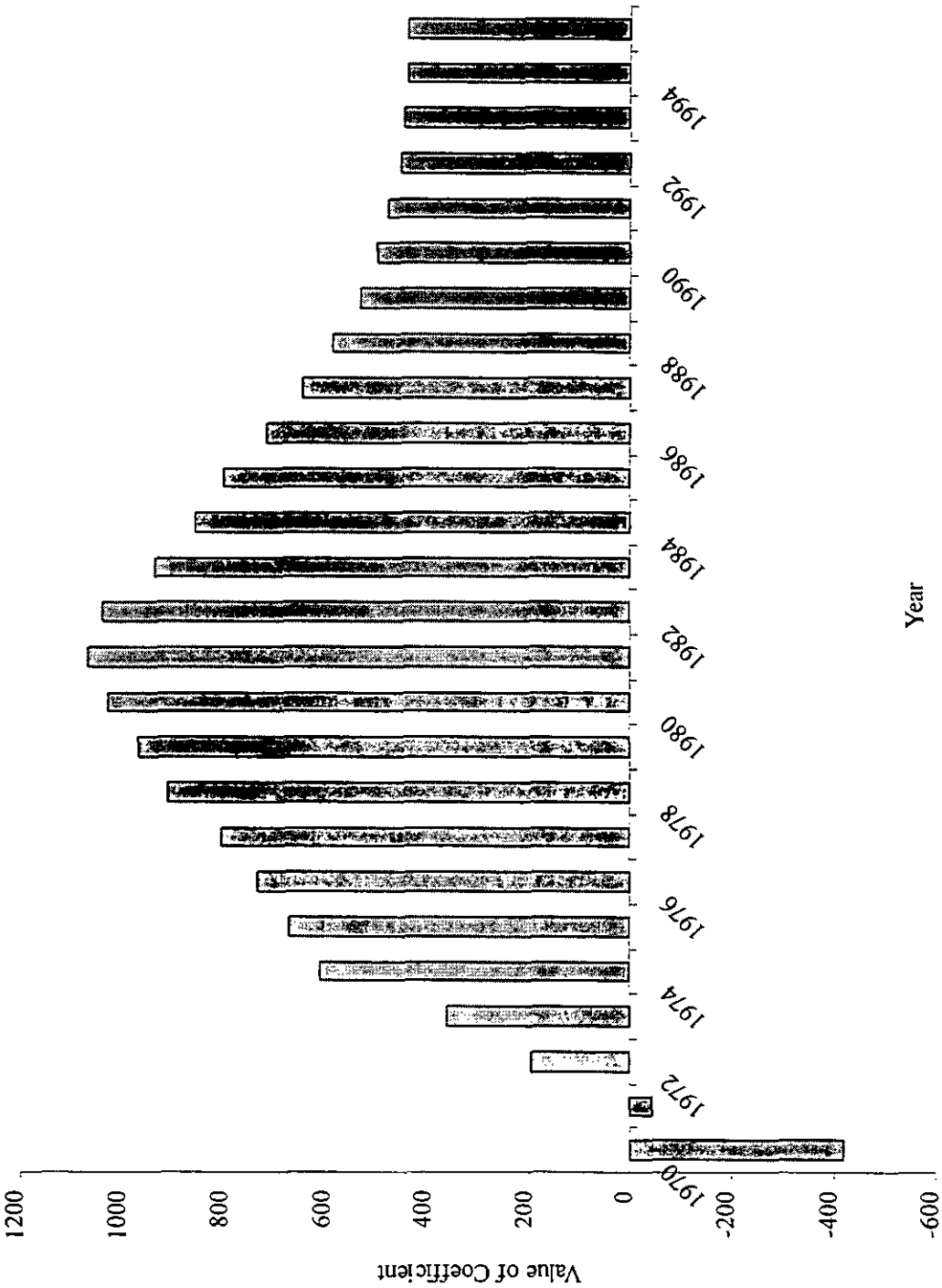

Figure 5-1. Coefficients relating employment to year, Lafourche Parish, 1970 to 1995.

Examining all interventions or structural changes that may have affected Gulf of Mexico OCS oil and gas activities and subsequently the social and economic characteristics cannot be easily done. The number of potential interventions or changes that might have affected OCS oil and gas activities are too numerous to adequately examine. Local, state, national, and international events could contribute to instability. New technology for improving the exploration or production of OCS oil or gas could alter the structural responses. New training programs or changes in labor contracts could affect the magnitude of the relationship between OCS oil and gas activities and the social and economic indicators. Because of the large number of potential interactions, the analysis instead focused on identifying the nature of stability or instability, and reducing the potential influence of interventions on the social and economic characteristics by using dynamic specifications which tend to smooth the data over time and mitigate the influence of unstable relationships. The dynamic specifications and smoothing of data permit an analysis of the possible ramifications of OCS oil and gas activities on the social and economic characteristics of the study area without determining all interventions or structural changes.

Analyses revealed highly unstable relationships over time and across areas. Given the nature of the oil and gas industry and the large number of local, national, and international events that might affect the oil and gas industry, it is not surprising that the possible relationships between the oil and gas indicators and the social and economic characteristics are highly unstable. Documenting all sources of potential instability and explicitly quantifying all the potential sources between 1930 and 1995 that may have influenced the social and economic characteristics is not feasible given the available data. Consistent data between 1930 and 1969 are typically not available on an annual basis (e.g., Census data are for 10 year intervals); consistent data refers to variables for which data categories are same in all years (e.g., employment statistics by age groupings changed between 1930 and 1969; they thus provide an inconsistent data series). From 1969 through 1995, however, the data are available on an annual basis and are a consistent series. Therefore, the subsequent analysis and discussion are restricted to explaining whether or not a relationship between the Gulf of Mexico OCS oil and natural gas and the social and economic indicators were stable or unstable between 1969 and 1995. Periods of major structural changes are, however, identified and discussed.

5.6.1 Stability of Trends in Gulf of Mexico OCS Oil and Gas and Social and Economic Indicators

As depicted in Table 5-6, the trends in Gulf of Mexico OCS crude oil and natural gas indicators and the social and economic indicators are highly unstable (i.e., the trends have changed over time). Most indicators for all study areas were found to have unstable temporal trends. That is, the annual rates of change for the various oil and gas and social and economic indicators changed between 1969 and 1995. During some time periods, the annual rates of change were positive and very high; during other periods, the annual rates of change were low and sometimes negative. Baldwin County appeared to have the most

Table 5-6. Stability of trend between 1969 and 1995.

Indicator	Lafourche Parish	Terrebonne Parish	San Patricio County	Baldwin County	Mobile County
	Time	Tiem	Time	Time	Time
Population	US	US	US	US	US
Personal Income	US	US	US	US	US
Farm Income	S	S	S	S	S
Per Capita Income	US	US	US	S	US
Earnings by Place of Work	US	US	US	S	S
Agri. Services, Forestry, Fisihing and Other	S	S	US	S	US
Mining	US	US	US	US	US
Oil and Gas Extraction	US	US	US	US	US
Construction	US	US	US	S	S
Manufacturing	US	US	US	S	US
Transportation and Public Utilities	US	US	S	S	S
Wholesale Trade	0	US	US	US	US
Retail Trade	US	US	US	US	US
Services	US	S	S	US	US
Services: Health Services	S	US	US	US	US
Government and Government Enterprises	US	US	US	US	S
Wage and Salary Disbursement	US	US	US	S	S
Average Earnings Per Job	US	US	US	US	US
Wage and Salary Earnings Per Job	US	US	US	US	US
Net Earnings	US	US	US	US	S
Establishments Total					
Agri. Services, Forestry, Fisihing and Other					
Mining					
Manufacturing					

Table 5-6. Stability of trend between 1969 and 1995 (cont'd).

Indicator	Lafourche Parish	Terrebonne Parish	San Patricio County	Baldwin County	Mobile County
	Time	Tiem	Time	Time	Time
Employment					
Total Full and Part-Time	US	US	US	US	S
Wage and Salary Jobs	US	US	US	US	S
Farm	US	US	US	US	US
Agri.l Services, Forestry, Fishing and Other	S	S	S	S	US
Mining	US	US	US	S	US
Construction	US	US	US	S	S
Manufacturing	0	US	0	S	0
Transportation and Public Utilities	US	US	US	S	S
Wholesale Trade	S	US	US	US	S
Retail Trade	S	US	US	US	S
Fire, Insurance, and Real Estate	US	US	US	US	US
Services	S	S	S	US	US
Government and Government Enterprises	S	S	US	US	S
Proprietors					
Total	US	US	US	US	S
Nonfarm	US	US	US	S	S
Farm	US	US	US	US	US
Transfer Payments					
Total	US	US	US	S	S
Government Payments to Individuals	US	US	US	S	S
Medicare	US	US	US	US	US
Public Assistance Medical Care	US	US	US	S	US
Aid to Families with Dependent Children	US	US	US	US	US
Food Stamps	S	S	S	US	US
Social Indicators					
Suicides Per 100,000 Population	0	US	0	US	US
Number of Serious Crimes Known to Police	0	US	0	US	US

US - unstable relationship between social and economic indicator and time. Implies that the mathematical value or coefficient relating the value of the social or economic indicator to time is changing or not constant. S - a stable or constant relationship between the social or economic indicator and time. 0 - no relationship over any range or time period of the data.

stable social and economic structures. Mobile County followed Baldwin County in terms of having stable structures. San Patricio County had the least stable social and economic structures. Lafourche and Terrebonne parishes ranked third and fourth in terms of stable social and economic structures over time.

More important than the rankings, however, is the number of highly unstable temporal trends for all communities and especially for Lafourche and Terrebonne parishes, and San Patricio County. The absence of stability indicates highly unstable social and economic structures. Given the apparent economic dependency on oil and gas by these counties and parishes, the lack of stability is not surprising. Prices, production, and sales values of oil and natural gas are highly variable because of international events which affect prices, production, exploration, and sales. An OPEC production limit may have substantial ramifications for the economies of areas dependent upon oil or natural gas.

The temporal trends for all six Gulf of Mexico OCS oil and gas indicators -- sales volumes of crude oil and natural gas, prices of crude oil and natural gas, and sales values of crude oil and natural gas -- were highly unstable between 1969 and 1995 (see Tables 5-7 through 5-9). Over time, the coefficients (i.e., the recursive or time-dependent coefficients, which equal the regression parameters estimated using different periods of time) relating the social and economic indicators to the OCS oil and gas indicators often changed in sign and value, and thus, indicated extremely unstable trends and responses to Gulf of Mexico OCS oil and gas indicators. Given the apparent economic dependency of the three communities on Gulf of Mexico OCS crude and natural gas and the highly unstable temporal patterns for oil and gas, the trends in the social and economic structures of Lafourche and Terrebonne parishes, and San Patricio County and the relationships to OCS oil and gas indicators would be expected to be highly unstable.

The absence of stability is consistent with the literature on resource dependency theory. As suggested by Krannich and Zollinger (1997), unstable social and economic structures are typical of many resource dependent communities. This study focused on 49 social and economic indicators, but these indicators were selected as being reasonable indicators to depict the social and economic impacts of OCS oil and gas activities on the Gulf of Mexico study areas (see Section 4). If the values of most of the social and economic indicators widely varied between 1969 and 1995, it is highly probable that the underlying social and economic structures of the study areas also widely varied. The social and economic indicators selected to depict the social and economic structures of San Patricio County were also highly unstable; the instability, however, may also be related to military activities in the area as well as Gulf of Mexico OCS oil and gas activities. Although the unstable trends and relationships do not necessarily prove that Lafourche and Terrebonne parishes and San Patricio County are highly dependent upon natural resources (i.e., are resource dependent communities), the instability and high variability of the values of the indicators for the communities is, at least, consistent with resource dependent communities.

Table 5-7. Stability of trend with respect to oil and gas production, 1969 to 1995.

Indicator	Lafourche Parish		Terrebonne Parish		San Patricio County		Baldwin County		Mobile County	
	Oil	Gas	Oil	Gas	Oil	Gas	Oil	Gas	Oil	Gas
Population	US	US	US	US	US	US	0	US	US	S
Personal Income	US	US	US	S	US	US	US	US	US	US
Farm Income	US	US	US	US	S	S	0	US	US	US
Per Capita Income	US	S	US	S	US	US	0	US	US	US
Earnings by Place of Work	US	US	S	US	US	US	0	US	US	US
Agri. Services, Forestry, Fishing and Other	US	US	0	US	0	0	0	US	0	US
Mining	US	US	US	US	US	US	0	US	US	S
Oil and Gas Extraction	US	US	US	US	US	US	0	US	0	US
Construction	US	US	S	US	0	US	0	S	0	S
Manufacturing	S	US	S	US	US	0	US	US	US	S
Transportation and Public Utilities	US	US	US	US	US	0	US	US	S	S
Wholesale Trade	US	US	0	US	US	US	US	US	US	US
Retail Trade	US	US	US	S	US	US	US	US	US	S
Services	US	US	US	US	US	US	US	US	US	US
Services: Health Services	US	US	US	US	US	US	US	US	US	US
Government and Government Enterprises	US	US	US	US	US	US	US	US	US	US
Wage and Salary Disbursement	US	US	S	S	US	US	0	US	US	US
Average Earnings Per Job	US	US	US	US	US	US	0	US	0	0
Wage and Salary Earnings Per Job	US	US	US	US	0	US	0	US	0	0
Net Earnings	US	US	S	US	US	US	US	US	US	US
Establishments Total										
Agri. Services, Forestry, Fishing and Other										
Mining										
Manufacturing										

Table 5-7. Stability of trend with respect to oil and gas production, 1969 to 1995 (cont'd).

Indicator	Lafourche Parish		Terrebonne Parish		San Patricio County		Baldwin County		Mobile County	
	Oil	Gas	Oil	Gas	Oil	Gas	Oil	Gas	Oil	Gas
Employment Total Full and Part-Time	US	US	US	S	US	US	US	US	US	US
Wage and Salary Jobs	US	S	US	S	US	US	US	US	US	US
Farm	US	S	US	S	US	US	US	US	US	0
Agri. Services, Forestry, Fishing and Other	US	US	US	US	US	US	US	US	US	S
Mining	US	US	S	US	US	US	US	US	US	S
Construction	US	US	US	S	0	US	US	US	US	US
Manufacturing	US	US	0	US	0	0	US	US	S	S
Transportation and Public Utilities	US	US	US	S	0	0	US	US	S	S
Wholesale Trade	US	US	S	S	US	US	US	US	US	US
Retail Trade	US	US	US	US	US	US	US	US	US	US
Fire, Insurance, and Real Estate	US	US	US	S	US	US	US	US	US	S
Services	US	US	US	US	US	US	US	US	US	US
Government and Government Enterprises	US	US	US	US	US	US	US	US	US	US
Proprietors Total	US	US	US	US	US	US	US	US	US	US
Nonfarm Proprietors	US	US	US	US	US	US	US	US	US	US
Farm Proprietors	US	US	US	US	US	US	US	US	US	US
Total Transfer Payments	US	US	US	US	US	US	US	US	US	US
Government Payments to Individuals	US	US	US	US	US	US	US	US	US	US
Medicare	US	US	US	US	US	US	US	US	US	US
Public Assistance Medical Care	US	US	US	US	US	US	US	US	US	US
Aid to Families with Dependent Children	US	US	US	US	US	US	0	US	0	0
Food Stamps	US	US	US	US	US	US	US	US	US	US
Social Indicators Suicides Per 100,000 Population	US	US	US	US	US	US	0	0	US	US
Number of Serious Crimes Known to Police	US	US	US	US	US	US	0	0	US	US

US - unstable relationship between social and economic indicator and GOM OCS oil or gas production. Implies that the mathematical value or coefficient relating the value of the social or economic indicator to the value of the oil or gas indicator is changing or not constant. S - a stable or constant relationship between the social or economic indicator and GOM OCS oil or gas production. 0 - no relationship over any range or time period of the data.

Table 5-8. Stability of trend with respect to oil and gas prices, 1969 to 1995.

Indicator	Lafourche Parish		Terrebonne Parish		San Patricio County		Baldwin County		Mobile County	
	Oil	Gas	Oil	Gas	Oil	Gas	Oil	Gas	Oil	Gas
Population	US	US	US	US	US	US	US	US	US	US
Personal Income	US	US	US	US	US	US	US	US	US	US
Farm Income	US	S	US	S	US	S	US	US	0	0
Per Capita Income	US	S	S	S	S	S	US	US	US	US
Earnings by Place of Work	US	US	S	US	S	S	US	US	US	US
Agri. Services, Forestry, Fishing and Other	US	US	US	S	US	US	US	0	US	0
Mining	US	US	S	US	US	US	0	S	S	US
Oil and Gas Extraction	US	US	US	US	US	US	S	US	US	0
Construction	US	US	S	US	US	US	US	US	0	0
Manufacturing	US	US	US	US	US	US	US	0	0	US
Transportation and Public Utilities	S	US	S	US	US	US	US	US	0	US
Wholesale Trade	S	US	S	US	US	US	US	US	US	US
Retail Trade	S	US	S	US	S	US	US	US	US	US
Services	US	US	US	US	US	US	US	0	US	US
Services: Health Services	US	US	US	US	US	US	US	0	US	US
Government and Government Enterprises	US	US	US	US	US	US	US	0	US	US
Wage and Salary Disbursement	S	US	S	US	S	S	US	US	US	US
Average Earnings Per Job	US	US	US	US	US	US	0	US	0	0
Wage and Salary Earnings Per Job	US	US	US	US	US	US	0	0	0	0
Net Earnings	S	US	S	US	0	US	0	0	US	US
Establishments Total	US	US	US	US	US	US	US	US	US	US
Agri. Services, Forestry, Fishing and Other	US	US	US	US	US	US	US	US	US	US
Mining	US	US	US	US	US	US	US	US	US	US
Manufacturing	US	US	US	US	US	US	US	US	US	US

Table 5-8. Stability of trend with respect to oil and gas prices, 1969 to 1995 (cont'd).

Indicator	Lafourche Parish		Terrebonne Parish		San Patricio County		Baldwin County		Mobile County	
	Oil	Gas	Oil	Gas	Oil	Gas	Oil	Gas	Oil	Gas
Employment										
Total Full and Part-Time	US	US	US	S	US	US	0	US	US	US
Wage and Salary Jobs	US	US	US	S	US	US	0	0	US	US
Farm	US	US	US	S	US	US	US	US	US	US
Agri. Services, Forestry, Fishing and Other	US	US	US	US	US	US	US	US	S	US
Mining	US	US	US	US	US	US	US	US	US	US
Construction	US	US	S	S	US	US	US	US	US	US
Manufacturing	0	US	US	US	0	0	US	US	S	US
Transportation and Public Utilities	S	S	S	US	S	US	US	US	US	US
Wholesale Trade	S	US	S	US	S	US	US	US	US	US
Retail Trade	US	US	US	S	US	US	0	US	US	US
Fire, Insurance, and Real Estate	US	US	US	S	S	S	US	US	US	US
Services	US	US	US	US	US	US	US	US	US	US
Government and Government Enterprises	US	US	US	US	US	US	0	US	US	US
Proprietors										
Total	US	US	US	US	US	US	US	US	US	US
Nonfarm	US	US	US	US	US	US	US	US	US	US
Farm	US	US	US	US	US	US	US	US	US	US
Transfer Payments										
Total	US	US	US	US	US	US	0	US	US	US
Government Payments to Individuals	US	US	US	US	US	US	0	US	US	US
Medicare	US	US	US	US	US	US	0	US	US	US
Public Assistance Medical Care	US	US	US	US	US	US	0	US	US	US
Aid to Families with Dependent Children	US	US	US	US	US	US	0	US	US	US
Food Stamps	US	US	US	US	US	US	US	US	US	US
Social Indicators										
Suicides Per 100,000 Population	US	US	US	US	US	US	US	US	US	US
Number of Serious Crimes Known to Police	US	US	US	US	US	US	US	US	US	US

US- unstable relationship between social and economic indicator and GOM OCS oil or gas prices. Implies that the mathematical value or coefficient relating the value of the social or economic indicator to the value of the oil or gas indicator is changing or not constant. S - a stable or constant relationship between the social or economic indicator and GOM OCS oil or gas prices.
0 - no relationship over any range or time period of the data.

Table 5-9. Stability of trend with respect to oil and gas sales value, 1969 to 1995.

Indicator	Lafourche Parish		Terrebonne Parish		San Patricio County		Baldwin County		Mobile County	
	Oil	Gas	Oil	Gas	Oil	Gas	Oil	Gas	Oil	Gas
Population	US	US	US	US	US	US	US	US	US	US
Personal Income	US	US	US	US	US	US	US	US	US	US
Farm Income	0	US	US	US	0	0	US	US	0	0
Per Capita Income	US	US	US	US	US	US	US	US	US	US
Earnings by Place of Work	US	US	US	US	US	US	US	US	US	US
Agri. Services, Forestry, Fishing and Other	US	US	US	US	0	US	0	US	US	0
Mining	S	US	US	US	US	US	US	US	US	US
Oil and Gas Extraction	S	US	S	US	0	0	0	0	0	0
Construction	US	US	US	US	US	US	US	US	US	US
Manufacturing	US	US	US	US	0	US	US	US	US	US
Transportation and Public Utilities	US	US	US	US	US	0	US	US	US	US
Wholesale Trade	US	US	US	US	US	US	US	US	US	US
Retail Trade	US	US	US	US	US	0	US	US	US	US
Services	US	US	US	US	US	US	US	US	US	US
Services: Health Services	US	US	US	US	US	US	US	US	US	US
Government and Government Enterprises	US	US	US	US	US	US	US	US	US	US
Wage and Salary Disbursement	US	US	US	US	US	US	US	US	US	US
Average Earnings Per Job	0	0	0	0	0	0	0	0	0	0
Wage and Salary Earnings Per Job	0	0	0	0	0	0	0	0	0	0
Net Earnings	US	US	US	US	US	US	US	US	US	0
Establishments										
Agri. Services, Forestry, Fishing and Other	US	US	US	US	US	US	US	US	US	US
Mining	US	US	US	US	US	US	US	US	US	US
Manufacturing	US	US	US	US	US	US	US	US	US	US

Table 5-9. Stability of trend with respect to oil and gas sales value , 1969 to 1995 (cont'd).

Indicator	Lafourche Parish		Terrebonne Parish		San Patricio County		Baldwin County		Mobile County	
	Oil	Gas	Oil	Gas	Oil	Gas	Oil	Gas	Oil	Gas
Employment										
Total Full and Part-Time	US	US	US	US	US	US	US	US	US	US
Wage and Salary Jobs	US	US	US	US	US	US	US	US	US	US
Farm	US	US	US	US	US	S	US	US	US	US
Agri. Services, Forestry, Fishing and Other	US	US	US	US	US	US	US	US	US	US
Mining	US	US	US	S	US	US	US	US	US	US
Construction	US	US	US	US	US	US	US	US	US	US
Manufacturing	US	US	US	US	US	US	US	US	US	0
Transportation and Public Utilities	US	US	US	US	US	US	US	US	0	US
Wholesale Trade	US	US	US	US	US	US	US	US	US	US
Retail Trade	US	US	US	US	US	US	US	US	US	US
Fire, Insurance and Real Estate	US	0	US	0	US	0	US	0	US	0
Services	US	US	US	US	US	US	US	US	US	US
Government and Government Enterprises	US	US	US	US	US	US	US	US	US	US
Proprietors										
Total	US	US	US	US	US	US	US	US	US	US
Nonfarm	US	US	US	US	US	US	US	US	US	US
Farm	US	US	US	US	US	US	US	US	US	US
Transfer Payments										
Total	US	US	US	US	US	US	US	US	US	US
Government Payments to Individuals	US	US	US	US	US	US	US	US	US	US
Medicare	US	US	US	US	US	US	US	US	US	US
Public Assistance Medical Care	US	US	US	US	US	US	US	US	US	US
Aid to Families with Dependent Children	US	US	US	US	US	US	US	US	0	US
Food Stamps	US	S	US	US	US	US	US	US	US	US
Social Indicators										
Suicides Per 100,000 Population	US	US	US	US	US	US	US	US	US	US
Number of Serious Crimes Known to Police	US	US	US	US	US	US	US	US	US	US

US - unstable relationship between social or economic indicator and GOM OCS oil or gas sales values. Implies that the mathematical value or coefficient relating the value of the social or economic indicator to the value of the oil or gas indicator is changing or not constant. S - a stable or constant relationship between the social or economic indicator and GOM OCS oil or gas sales value. 0 - no relationship over any range or time period of the data.

Starting about 1989, the social and economic structures of the five study area counties or parishes began to show signs of stabilizing. The social and economic indicators followed a less variable temporal pattern. The temporal response coefficients for the social and economic indicators became relatively constant, and thus, indicate a stabilization of the social and economic structures of Lafourche and Terrebonne parishes and San Patricio County. The trends in Gulf of Mexico OCS crude and natural gas sales volumes also began to stabilize in 1988 and 1989. Prices and sales values of Gulf of Mexico OCS crude and natural gas, however, remained highly erratic. A possible explanation for the increasing stability in the social and economic structures is that the economies of the study areas appeared to become more diversified in the late 1980's and early 1990's. As indicated in Section 4, the economies became more dependent upon services and government activities; they became less dependent on oil and gas activities, agriculture, and manufacturing -- industrial activities that are often associated with highly unstable economies.

Interestingly, nearly all the time-based or recursive coefficients for all social and economic indicators for Lafourche and Terrebonne parishes and San Patricio County followed the same temporal pattern. Between 1969 and 1972, the time-based coefficients relating the social and economic indicators to the OCS oil and gas indicators were positive and increasing; they then declined but remained positive through 1974; from 1974 through 1981, they increased at an increasing rate and peaked in 1981; from 1981 through 1987 to 1989, the coefficients declined but remained positive; from 1987 to 1989, the coefficients stabilized and were nearly equal in value for every year.

Further examination of the temporal coefficients reveals that the largest level of instability occurred between 1974 and 1988. It is during this period when the time-based coefficients rapidly increased (1974 to 1981) and subsequently declined (1981 to 1988). After 1988, the coefficients tend to remain unchanged.

The fact that the coefficients are highly unstable and changing indicates rapidly changing social and economic structures in Lafourche and Terrebonne parishes and San Patricio County between 1969 and 1995. Even Baldwin County appears to have experienced substantial change in its social and economic structures over time. On the other hand, Mobile County has experienced the greatest stability in terms of employment (see Figure 5-2). Not only is the long-run trend in total full and part-time employment for Mobile County highly stable, so are the trends in employment in many of the other sectors in the county. Unfortunately, Figure 5-2 does not adequately depict the concept of stability because the values of the estimated recursive coefficients distort the magnitude of stability (e.g., the coefficients relating total full and part-time employment to time for Mobile County between 1974 and 1994 are mostly in the range of 3,000 to 5,000 while the range of the coefficients for San Patricio County are considerably lower; it thus appears that the temporal trend for San Patricio County is more highly stable when, in fact, the trend is most stable for Mobile County).

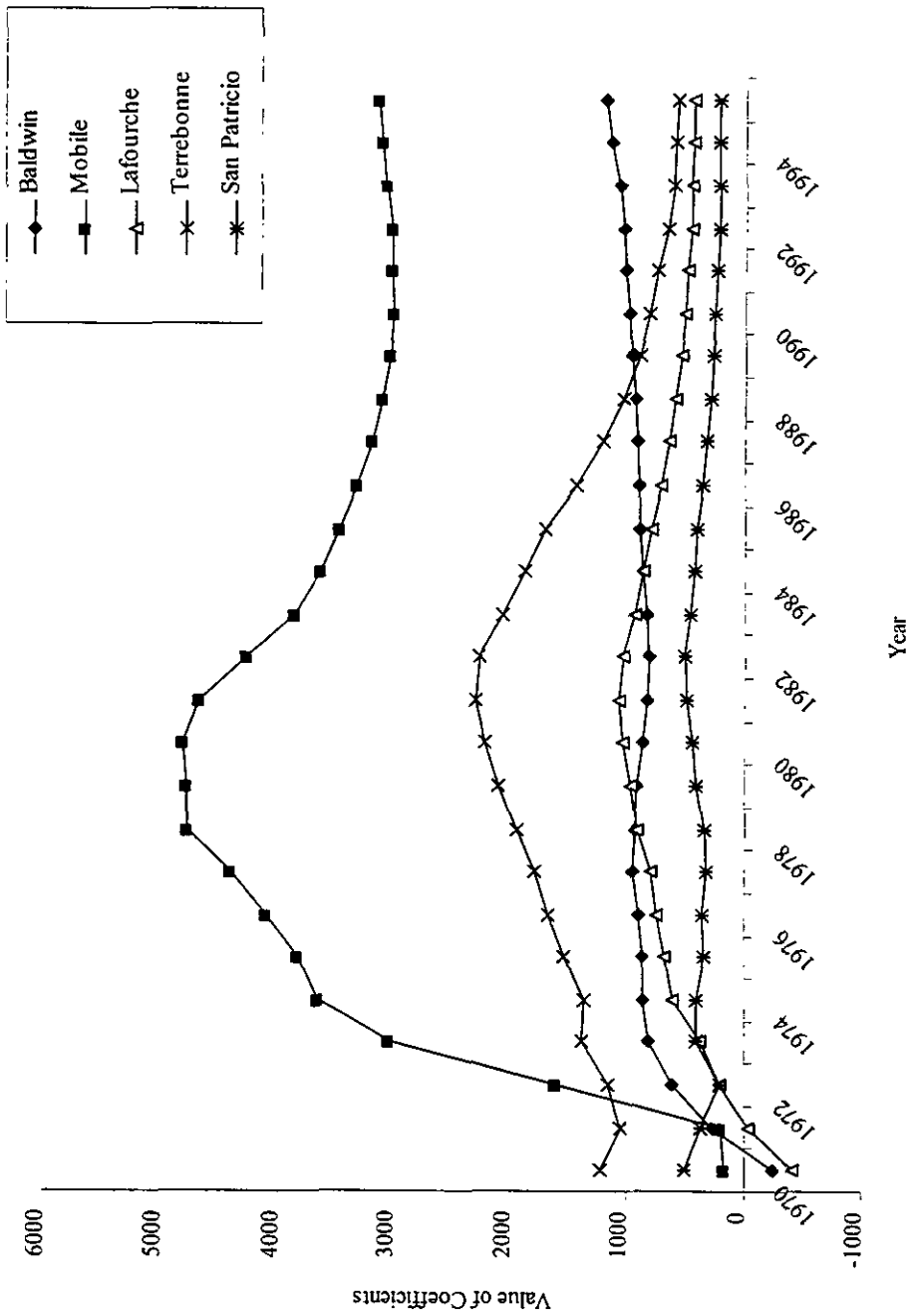

Figure 5-2. Recursive coefficients for total full and part-time employment, 1970 to 1995.

5.6.2 Stability between Oil and Gas Sales Volumes and Social and Economic Indicators

When the social and economic indicators for the five study area counties are examined relative to Gulf of Mexico OCS crude oil and natural gas sales volumes, very few stable relationships are found (see Table 5-7). There also are numerous social and economic indicators that have no relationship, of any type, to Gulf of Mexico OCS crude oil and natural gas production.

In general and relative to all study areas, the coefficients relating the social and economic indicators to Gulf of Mexico OCS sales volumes of crude oil and natural gas were extremely unstable. For all study areas and most of the major industry and social indicators (e.g., earnings, per capita personal income, employment, and public expenditures such as transfer payments, Medicare, and food stamps), the relationships were positive between 1969 and 1975 with respect to crude oil sales volumes and negative between 1976 and 1995. The relationships between the social and economic indicators and the sales volume of natural gas were positive between 1969 and 1995 for all variables and study areas.

Relative to Gulf of Mexico OCS crude oil and condensate sales volume, Lafourche and Terrebonne parishes and San Patricio County had the largest number of unstable social and economic relationships. Most of the instability appears to be related to events occurring between 1977 and 1988 -- boom and bust periods. After 1988, many of the relationships between the social and economic indicators are stable and negative (e.g., as the sales volume of crude increased, the value of the social or economic indicator decreased). Baldwin and Mobile counties had the largest number of insignificant relationships between crude oil and condensate sales volume and the social and economic indicators.

Relative to Gulf of Mexico OCS natural gas sales volume, the social and economic relationships are also highly unstable. Baldwin County and Lafourche Parish have the largest number of unstable relationships between the social and economic indicators and the sales volume of Gulf of Mexico OCS natural gas. The largest level of instability for Baldwin County occurred between 1969 and 1977; the relationships between the social and economic indicators for Mobile County and the natural gas sales volume were also highly unstable between 1969 and 1977. Lafourche and Terrebonne parishes and San Patricio County experienced the greatest levels of instability between 1974 and 1987 -- the boom and bust years. The relationships between the social and economic indicators for both Baldwin and Mobile counties were explosive between 1982 and 1995. Most of the relationships for Lafourche and Terrebonne parishes, and San Patricio County became stable in 1988 and remained stable through 1995.

5.6.3 Stability between Oil and Gas Prices and Social and Economic Indicators

The estimated coefficients relating the social and economic indicators to Gulf of Mexico OCS crude oil and natural gas prices were, like those relating the social and economic indicators to the sales volumes of crude and natural gas, highly unstable (see Table 5-8). Estimates varied in sign and in magnitudes. Without a more extensive analysis of all possible structural changes, it is not possible to precisely determine how changes in the Gulf of Mexico OCS prices of crude oil and natural gas have affected the social and economic structures of the five study area counties. That is, the precise magnitude of the possible ramifications of OCS oil and natural gas activities on the social and economic characteristics cannot be determined because of the highly unstable relationships. General patterns of the possible ramifications, however, were determined and are further discussed in this section.

There were several general patterns in the relationships between the social and economic indicators and crude and natural gas prices. Overall and with respect to crude oil and condensate prices, population for all study areas, except San Patricio County, was negatively related to crude prices between 1969 and 1972, and positively related to crude prices between 1973 and 1995. For San Patricio County, population appeared to be positively related to crude prices in all years except 1972, which had a negative relationship.

In terms of earnings and income relative to study areas, there were two major patterns: (1) a negative relationship between earnings by each sector and crude prices between 1969 and 1972, and (2) a positive relationship between earnings and crude prices between 1973 and 1995. Baldwin County, however, exhibited positive relationships between earnings by business sector and crude prices between 1969 and 1995, except for a negative relationship occurring in 1972.

The pattern in the relationships between employment and crude prices was slightly different than that for earnings and crude prices. Total full and part-time employment was determined to be negatively related to crude prices between 1969 and 1972 and positively related between 1973 and 1995, except for Baldwin County and Lafourche Parish. Total full and part-time employment for Baldwin County and Lafourche Parish was positively related to crude prices in all years except 1972.

Sector employment also exhibited the same relationship to crude prices as did total full and part-time employment except for mining and manufacturing employment. Farm and mining employment were highly erratic and exhibited numerous changes in the relationship to crude prices. The relationship between manufacturing employment and crude prices in San Patricio County was also highly erratic and patterns could not be easily detected. Overall, the relationship between employment in each sector, except manufacturing and farming, and crude prices followed the relationship between total full and part-time

employment and crude prices: (1) a negative relationship between 1969 and 1972 and a positive relationship between 1973 and 1995 for Mobile County, Terrebonne Parish, and San Patricio County; and (2) a positive relationship between 1969 and 1995 except for 1972.

The relationships between earnings, population, income, employment and the price of natural gas were similar to those related to crude prices. There were, however, some minor differences. Population was negatively related to natural gas prices between 1969 and 1971 and positively related between 1972 and 1995 for all study area counties except San Patricio County. Population of San Patricio County was found to be positively related to natural gas prices in all years between 1969 and 1995. Similarly, earnings by each sector, except farming and mining, were negatively related to natural gas prices between 1969 and 1971 and negatively related between 1972 and 1995. No temporally-dependent relationship could be determined for farm sector earnings; all estimated relationships for farm sector earnings and natural gas prices were highly erratic and variable. Mining earnings were found to be positively related to gas prices in all years for Baldwin and Mobile counties and Lafourche Parish; mining earnings in Terrebonne Parish and San Patricio County were negatively related to gas prices between 1969 and 1972 and positively related between 1973 and 1995.

Except for the farm and mining sectors, employment by sector was positively related to natural gas prices between 1969 and 1995. The potential relationships between mining and farm sector employment and gas prices were too erratic to determine any temporal pattern. In addition, the relationship between manufacturing employment and natural gas prices was highly erratic for San Patricio County.

The potential relationships between the various public expenditures (e.g., total transfer payments, Medicare, Aid to Families with Dependent Children, and food stamp expenditures) and crude and natural gas prices were negative between 1969 and 1971 and positive between 1972 and 1995 for all study areas. The possible relationships between suicide rates and number of serious crimes known to police and crude and gas prices was too erratic to adequately describe.

5.6.4 Stability between Oil and Gas Sales Values and Social and Economic Indicators

In contrast to results obtained from the analysis of dynamic stability (constancy of regression coefficients over time) with respect to Gulf of Mexico OCS sales volumes and prices of crude oil and natural gas, the analysis of stability with respect to crude and gas sales values indicated that very few relationships were stable (see Table 5-9). For example, the estimates relating per capita personal income for Baldwin County to Gulf of Mexico OCS crude and condensate sales value suggested at least nine structural changes or periods during which the strength and sign of the relationship would change. Estimates relating

total and sector earnings to the sales value of crude oil and natural gas were highly inconsistent over time and with respect to the five study area counties.

The only time period for which the relationships between the social and economic indicators and the sales values of crude and natural gas might have been constant was between 1969 and 1970. Coefficient estimates of the relationships between the social and economic indicators and the sales values of crude oil and natural gas between 1969 and 1970, however, were statistically equal to zero.

There are several possible reasons for the lack of statistically stable relationships between the social and economic indicators and the sales values of crude and natural gas. The sales values were highly variable over time, particularly when compared to the sales volumes. The coefficient of variation for the sales values of crude and condensate and natural gas were, respectively, 42.2 and 60.4 percent. Price levels also had high coefficients of variation: 49.1 percent for the price of Gulf of Mexico OCS crude oil and condensate; and 54.3 percent for the price of Gulf of Mexico OCS natural gas. The coefficient of variation for the sales volumes of crude and natural gas was less than 20 percent; alternatively, the variation in sales volumes of crude and natural gas was insufficient to estimate highly significant relationships between the social and economic indicators and Gulf of Mexico OCS sales volumes of crude and natural gas.

Another reason why it may not have been possible to adequately determine any stable relationships between the social and economic structures and the sales values of crude and natural gas is that the values likely reflect demand and supply changes. The value equals the price times the quantity sold (sales volume). As prices rise, supplies of crude and natural gas often increase. Also, however, demand usually decreases as prices increase. Alternatively, if producers reduce supplies of crude and natural gas at a given price level or experience cost increases in production, prices will increase. Because of possible changes in demand and supplies of crude and natural gas, estimates of the relationships between the social and economic indicators and the sales values may be reflecting the influences of the demand for crude and natural gas during some periods and the supply of crude and natural gas in other periods. Estimates of the relationships between the social and economic indicators and the sales values of crude and natural gas would likely be highly unstable or erratic over time.

5.7 Overall Findings and Study Limitations

5.7.1 Overall Findings

In general, the statistical analyses support the contention that oil and gas activities on the OCS in the Gulf of Mexico region are important contributing factors to the social and economic structures of the five study counties. The analyses also support the contention that escalating oil and gas activities in the region contributed to the boom period between

1974 and 1981/1982. The statistical analyses also indicate that decreasing oil and gas activities substantially affected the social and economic structures between 1981/82 and 1987/1988 (i.e., the bust period). The analyses also revealed, however, that after 1988, the economies of the study areas became quite stable and less susceptible to changes in Gulf of Mexico OCS oil and gas activities.

Statistical analyses of the potential relationships between Gulf of Mexico OCS oil and gas activities and the social and economic characteristics of the study areas indicated highly unstable relationships between 1969 and 1995. During some years, the relationships were positive (i.e., positive correlation) and highly significant; in other time periods, the relationships were negative (i.e., an increase in the value of an OCS oil or gas indicator was associated with a decrease in a social or economic indicator) and significant. In other periods, the relationships were statistically insignificant. Given the highly unstable relationships over time, it is not possible to develop a single equation model that will precisely capture all possible dynamic relationships or relationships over all time periods and that will permit a statistically precise assessment of the possible influences of Gulf of Mexico OCS oil and gas activities on the social and economic characteristics. It is possible, however, to statistically assess general patterns or relationships between the Gulf of Mexico OCS oil and gas indicators and the social and economic characteristics of the five study areas. The analyses revealed that the economic characteristics, such as earnings, income, and employment, generally increased during the boom years, decreased during the bust periods, and became relatively stable after 1988.

Overall, Baldwin County appeared to have most stable social and economic structures between 1969 and 1995. Mobile County had the second most stable structures. San Patricio County had the largest instability in its social and economic structures. Lafourche and Terrebonne parishes ranked third and fourth in terms of structural stability.

Causality tests or the analysis that changes in oil and gas activities caused changes in the social and economic indicators did not strongly support the hypothesis. There were very few statistically significant relationships between the social and economic indicators and the oil and gas indicators. This especially was the case when the sales volume and prices were used as the oil and gas indicators. When sales values of oil and gas were used as the indicators, however, a large number of statistically significant relationships were found; particularly for Lafourche and Terrebonne parishes and San Patricio County. The economic indicators, but not the social indicators, were found to be strongly influenced by the sales values of Gulf of Mexico OCS crude oil and natural gas. Most of the significant relationships were positive in value (i.e., the economic indicators were positively related to the sales value of oil and gas).

The fact that the values of the social and economic indicators appeared to be more closely related to the sales values of OCS crude and natural gas should not be overly surprising. Gross revenue is more likely to depict economic activity than is the price or quantity. Price

increases may often be associated with reduced supplies of a product or increased demand for a product. Similarly, quantity changes may be associated with shifts in supply or demand. It is quite possible to have increasing prices, but decreasing production, and thus, negatively affect an economic indicator. Changes in revenues or sales values reflect not only changes in prices and quantities, but also changes in gross economic activity from year to year. Changes in the sales value are thus more likely to influence the economic activity of an area.

Examination of the dynamic responses (impulse response functions) obtained from the causality analysis revealed that shock or events affecting Gulf of Mexico OCS oil or gas activities could affect some social and economic characteristics for many years into the future. Statistically, the impacts of events affecting oil and gas activities might affect some social and economic characteristics of the study communities for up to 15 years; realistically, most of the impacts die out or equal nearly zero after 7 years. Further assessment of the values of the impulse response functions also supported the earlier conclusion of highly unstable social and economic responses to Gulf of Mexico OCS oil and gas activities; the mathematical values of the response functions did not dampen and dynamic stability was strongly rejected by the mathematical assessment of stability (i.e., there was no evidence to support the notion that the social and economic indicators would return to a predictable time path).

Initial analysis of the hypothesis that trends in the social and economic indicators were simply following U.S. trends was strongly rejected by the quantitative analysis. It was determined that relative to the states and study area counties, trends in the social and economic indicators for Texas and Mobile County most closely paralleled those for the United States. At the state level of analysis, trends for Mississippi were the least similar to those of the United States. In terms of the study area counties, the trends in the social and economic indicators for Lafourche Parish and Baldwin County were the least similar to those of the United States.

The analysis strongly rejected the existence of any long-run, stable, equilibrium relationships between the social and economic indicators and the Gulf of Mexico OCS oil and gas indicators. The absence of any long-run stable relationships implies that events or factors that might affect Gulf of Mexico OCS oil and gas activities in the region will likely elicit different social and economic responses; the possible responses range from negative to positive responses and no responses.

The combination of highly unstable estimates and the absence of long-run stable equilibrium relationships may pose problems for counties desiring to develop adaptive response strategies to better deal with changing OCS oil and gas activities in the Gulf of Mexico region. Predictions of potential responses are likely to be highly imprecise and to have very large statistical ranges (confidence intervals). It will, therefore, be quite difficult for counties to develop adequate response strategies. Alternatively, local government

agencies of the five communities may have attempted to implement adaptive response strategies to changes in OCS oil and gas activities; these strategies, however, may have needed to be regularly changed in order to respond to changes in OCS oil and gas activities. As a consequence, long-run and stable social and economic structures have not been attained.

5.7.2 Limitations

Although the quantitative analyses demonstrated that the social and economic characteristics of the study areas were dependent upon Gulf of Mexico oil and gas activities in the OCS in the Gulf of Mexico, the level of dependency on oil and gas and the importance of oil and gas to the social and economic structures could not be determined with very much precision. The statistical relationships were determined to be highly unstable and changing in magnitudes and sign (positive vs. negative) over time.

There are several possible reasons which might explain the low level of precision and the highly unstable estimates. First, the social and economic structures are actually highly unstable; this would appear to be consistent with the literature describing the social and economic structures of resource-dependent communities. Second, all analyses were based on bivariate analysis (i.e., one dependent (y) variable and one independent (x) variable rather than several dependent and independent variables). Although time-series approaches should capture the potential for statistically significant relationships, there is always the possibility of omitted variable bias which would contribute to inefficient and imprecise estimates. Third, the analyses examined the potential relationships between the social and economic indicators and the oil and gas indicators at the county or parish level. Examination of the potential importance of Gulf of Mexico OCS oil and gas activities at the county or parish level may be too aggregate or broad a geographic area to adequately determine the importance. Alternatively, Gulf of Mexico OCS oil and gas activities may be very important to a community within a county or parish but not the county or parish as a whole. Fourth, the analysis was done within a rigorous statistical framework rather than a conventional economic or social systems approach. That is, conventional economic and social systems approaches typically require very rigorous mathematical conditions and particular types of mathematical functions; the more rigorous statistical framework permits a broader examination of the possible relationships between Gulf of Mexico OCS oil and natural gas activities and the social and economic characteristics by not requiring adherence to rigorous theory and limited functional forms. In addition, the statistical time-series approach used in this study avoids the problems of making erroneous conclusions about the relationships because of inappropriate mathematical conditions or functional forms (e.g., if based on a rigorous economic systems approach, a test of a particular relationship between two variables is also a test of the underlying mathematical conditions and the appropriateness of the selected functional form). Fifth, the social and economic responses in the five study area counties could also reflect responses to changing price levels associated with increased energy prices.

Of the five limitations identified as possible reasons for the low level of precision in the estimates, the first, third, and fifth are the most appropriate. The social and economic structures of the five study area counties, particularly Lafourche and Terrebonne parishes and San Patricio County, do appear to be highly unstable. That conclusion is highly consistent with the social and economic literature on resource dependent communities (Krannich and Zollinger, 1997).

Although the analyses conducted for this study were appropriate for assessing the potential influences of Gulf of Mexico OCS oil and natural gas activities on the social and economic characteristics of the selected study areas, it is possible that conclusions based on the analyses may over- or understate the importance of OCS oil and natural gas to various communities within the counties or parishes. A county or parish is comprised of many communities and the analysis was limited to the county or parish level. Counties and parishes are much more heterogenous in their industrial bases and social characteristics than are communities. Moreover, county or parish data are aggregations of community data or activity; as such, there is the possibility of aggregation bias relative to making inferences about communities. There is, thus, the possibility that it may not be possible to use the results of county or parish level analyses to infer the importance of OCS oil and natural gas activities to communities. Unfortunately, data on the social and economic characteristics at the community level are seldom available on an annual or adequate temporal basis. Data on the social and economic characteristics at the community level are available from the decennial census. An analysis based on observations measured every 10 years, however, will not be particularly informative since important trends and changes within the decade will not be observed or reflected in the analysis.

The fifth possible limitation, that of changing energy prices, is potentially very critical to the analysis. Following the Arab oil embargo, energy prices substantially increased. The real price of energy increased 148.5 percent between 1975 and 1981. The real price of consumer goods increased by 175.5 percent during the same time period. Energy is typically viewed as a necessity or essential commodity for consumers and a primary input for manufacturers. As the price of energy increases, consumers typically have less income for purchasing other items and manufacturers often have to substitute other inputs for energy, accept lower profits, or find ways to increase the prices of their products. Numerous studies have demonstrated that the economies of the United States and other nations throughout the world, in fact the global economies, are highly dependent upon the supply and price of energy (Bohi, 1984; Green and Leiby 1993; Marcus 1992). Moreover, it has been illustrated that energy pricing policy often introduces world wide economic instability (U.S. Department of Energy, 1991). It is quite possible that estimates of potential influences of Gulf of Mexico OCS oil and gas activities on the social and economic characteristics also reflect community responses to changes in the prices of energy and other goods and services. It may not, therefore, be possible to statistically

separate or distinguish changes in the prices of energy and other goods and services from changes in the Gulf of Mexico OCS oil and natural gas activities with a high degree of precision.

5.7.3 Implications of Quantitative Analysis for Qualitative Analysis

The quantitative analysis provides insights into the relationship between the OCS oil and gas industry in the Gulf of Mexico and coastal communities. These insights derive not only from the power of this type of analysis, but also from what it cannot accomplish. The statistical tests described in this section indicate a significant impact of OCS oil and gas activity in all study areas, and especially in the Louisiana and Texas study areas. Yet, these relationships were difficult to test and often found to be so dynamic that they eluded easy explanation. Causality tests, for example, usually found no statistically significantly relationship between the selected oil and gas indicators and the selected social and economic indicators. Nevertheless, the analysis did demonstrate that events affecting OCS oil and gas activities in the Gulf of Mexico can have significant impacts on coastal communities.

One response to the shortcomings of the quantitative tests is to gather more data and construct more complex models grounded in more systematic theories. As noted in the discussion of limitations above, however, other explanations could account for the inability of statistics to provide more precise answers. The options include examining whether the economic and social structures that the indicators describe are in fact highly variable, whether the more significant and substantial impacts occur not at the county level, but in communities within those counties, or whether national economic events and trends are driving change.

These options suggested by the quantitative analysis can be addressed qualitatively with methods that engage the members of the studied communities directly. That is the purpose of the following sections.

6.0 Landscapes of the Gulf of Mexico

6.1 Introduction

The history of communities -- and regions -- may be approached through the study of their landscapes. Historian Mart Stewart, in *"What Nature Suffers to Groe": Life, Labor, and Landscape on the Georgia Coast, 1680-1920*, offers a concise definition of such a lens:

> The process of identifying, valuating, and selecting our resources from nature, of constructing means for exploiting them, and of developing the economic, social, and political relationships for reinforcing that exploitation is conducted by every community and society. What is regarded as valuable in the environment is shaped by cultural values and by the available technology. "Natural resources" are defined by society; their form and content are limited by nature, but the identification of them, the choice and use of them, and the creation of landscapes that are shaped by those choices and uses are accomplished by the humans who inhabit the environment (Stewart, 1996).

Landscapes vary in the extent to which they are shaped and constrained by nature. The maritime story of south Lafourche Parish, La. -- a story of oil and fish -- is shaped by the presence of these resources off south Lafourche Parish. The location of a munitions dump south of Mobile, Ala. had little to do with nature and the environment, but it forever changed that environment into an industrial zone. Landscapes vary in the extent to which the local community -- or global forces -- shape them. The military landscape of Ingleside was constructed through a series of decisions and non-decisions in Washington. The industrial landscape of Theodore, Ala. was rooted in Mobilians' efforts to "sell the South" to outside investors.

In Section 7, we tell many of these stories through a different lens, one that focuses on the connection between work and education. There, the lens is often directed to choices individuals and families make in adapting to the economies in which they are enmeshed. Here, we use landscape as an organizing tool for arraying the diverse historical moments and paths of communities along the Gulf Coast. Our focus is more on the various forces which shaped those landscapes over time.

The histories of the communities were developed from a rapid ethnographic study of the three study areas and reviews of documents collected in the field, through literature reviews, and through other sources. The field work for the project was conducted between October 1997 and June 1998. More than 100 informal conversations and discussions were held during the field work. Participants were assured anonymity, so that interview numbers and general characteristics are used when quotations from the discussions are used in text. The researchers sought the participation of a wide range of individuals, with special attention paid to economic interest, social class, and race/ethnicity. Although the participants were not a statistical sample of the population, they do tell the local story. (See Appendix A for a more detailed discussion of the methodology.)

One community dominates the history of each of the landscapes along the coast; other communities, other study areas, illustrate variations. We do not claim that the selected town is representative of that landscape across the gulf, nor do we claim that the privileged town has the most significant story to tell about the particular landscape in this region. Rather, in constructing the following accounts, we have followed several rules of thumb. First, we have tried to address places and processes that have not been addressed fully elsewhere. Second, we revisit some places and processes that have been examined, typically at different scales, with different methodologies. Third, we look at places and processes where we have adequate documentation -- oral histories, field discussions and observations, archival materials, and secondary sources. Finally, we attempt to tell interesting stories: if the people we talked with thought the stories they were living were interesting enough to recount, then we believe these stories will be interesting to others.

An overview follows. (See Figures 1-2 through 1-7 for maps of the study areas and counties or parishes.) The agricultural landscape is viewed through Schriever, La. and Mathis, Tex. The manifest change in the Texas landscape -- from labor-intensive vegetable production to land-extensive dry farming of grains and cotton -- was driven by a combination of natural and socio-political forces. In the 1960's, in rapid succession, a hurricane devastated the packing-shed infrastructure of the vegetable business, a minimum wage was mandated for farm workers, and Chicanos became politically active. In Schriever, an interesting historic interlude intrudes into the well-documented sugar-bowl story of the demise of plantations, labor strife in the sugar mills, mechanization of the sugar harvest, consolidation of farms and the retention of a small, "loyal" workforce. Between 1939 and 1943, Schriever was the site of the "Terrebonne Project," an experimental effort in communal farming sponsored by Franklin Roosevelt's Farm Security Administration. It foundered in part because of the acreage and crop limitations imposed by another of Roosevelt's programs, the Agricultural Adjustment Administration. Southern Baldwin County, Ala., tells a preeminently modern agricultural land-use story. Productive farmlands compete with residential developments; urban-based demands for plants and grass spawn labor-intensive and soil-depleting nursery and turf industries; the workforce is a pragmatic mixture of foreign labor and work-released prisoners.

The maritime landscape can be deciphered in south Lafourche Parish, where local residents for generations have had to grapple with the problematic definition of land and water. Throughout the historical progression of oil development from land to marsh to bay to the Outer Continental Shelf (OCS), local Cajuns have sought ways to work with, and buffer against, the industry. When the industry was booming, they put their generations-long knowledge of boats, the bayous, and open water into service for the industry. During downturns, they could resume traditional pursuits in the fisheries. Most local residents are equally at ease piloting a shrimp boat, a tugboat, a crewship and now a deepwater anchor tender, and not at all reluctant to cross the social divide into the "sports," the recreational fishery. While Louisiana proclaims itself as the "sportsman's paradise," most of the Gulf Coast is becoming the sportsman's empire, with a maritime landscape dominated by leisure

craft and the regulatory structures to underwrite recreation. We defer this story to our discussion of the leisure landscape.

Theodore, Ala., on the western shore of Mobile Bay, provides an entryway into the complex industrial landscape of the Gulf Coast and of the South since World War II. The community lies in an area of Mobile County which, by local choice, is unplanned, unzoned, and unincorporated, circumstances not uncommon throughout the region. The industrialization of Theodore is a story of the intersection of interests, public and private, local, national, and international. That local residents now wake up to see yet another chemical plant under permit and construction in the neighborhood is not uncommon. Coastal Bend, more particularly the shoreline around Corpus Christi Bay, replicates the "refining region" of east Texas that Joseph Pratt (1980) has ably chronicled. It shares many of the industrial pains and promises of south Mobile County, with the addition of a severely constricted resource -- water. The demand for that resource has had consequences as far away as San Antonio and into central Texas. The industrialization of south Louisiana has also been constrained by water -- too much of it in brackish marshes and swamps, too little in potable supplies. But the interesting industrial stories here have very home-grown roots: the development of major shipbuilding operations by local families and the aggressive construction and marketing of a port designed to service new deepwater development on the OCS.

Ingleside, Tex, of our study communities, is the only victor in the recent battle to construct a military landscape. But other areas along the coast have experienced the booms and busts of the military. Brookley Field Air Base was constructed in Mobile in 1940, and soon employed 17,000 civilian workers. With its closure in 1969, the Mobile Chamber of Commerce issued tax-free industrial development bonds to attract industry to the site, furthering the process of creating the industrial landscape of south Mobile County. The military landscape now is dominated by "homeports," planned and, in some cases, constructed during the 1980's to berth a proposed expansion of the naval fleet, which instead was reduced. One such base was built on the Theodore Ship Channel, at substantial local expense. It was never staffed and is now for rent. Another was constructed at Ingleside, with $168 million in local inducements. With the downsizing of the Navy it never became a "homeport," but found new life, against all the logic that the General Accounting Office could marshall, as the "mine warfare capital of the world." The military landscape, altered time and again by external forces and decisions, affords a comparative dimension to the cyclic impacts of the oil and gas industry on Gulf Coast communities.

To the extent that leisure activity has made the coastal zone one of the most embattled landscapes throughout the country in recent decades, the "sugar sand" beach of Gulf Shores provides an appropriate window into this contest. But the story begins with the Great October Storm of 1893, killing 2,000 residents of the fishing community of Cheniere Caminada and leveling the fledgling tourist destination of Grand Isle, La. There was of course no Federal Emergency Management Agency at the time, so survivors moved up Bayou Lafourche to the high ground of Leeville, Golden Meadow, and Cut Off, 3 to 4 feet above sea

level. Through this century, the movement of people and their leisure-time accouterments reversed. By the time Hurricane Frederic made land fall on the Alabama coast in 1979, there was emergency relief and developers jumped at the hurricane's "natural urban renewal" to build Gulf Shores into a resort. Since the disaster or blessing of Frederic, the coastal landscape of Gulf Shores and other seaside locales has been, to one degree or another, demarcated by myriad lines, allowing or prohibiting myriad things. The drawers of these lines reside in numerous places: local planning, zoning and building inspection offices, county seats, State offices of environmental management, regional headquarters of the national estuary program, and the Federal offices of coastal zone regulators. Gulf Shores, across the bay from the unincorporated, unplanned, ungoverned Theodore, is an archetype for the regulated manipulation of the gulf's coastal zone. Much the same story could be told for Coastal Bend, with its genuine barrier islands [Gulf Shores is an artificial one, created by the construction of the Intracoastal Waterway (ICW)].

While these communities reflect the diversity of settlements along the Gulf Coast, they also indicate the persistent impact of three historical realities. First, these are southern communities and, as such, have had to contend with the burdens of southern history, specifically the legacy of racial segregation, one-party politics, and low income and educational levels. These historical factors account for the discrepancies between black, white, and brown in the study areas, the reluctance or difficulty of local government to support environmental and social initiatives, and the inability of Gulf Coast locations to attract a strong base of high-wage, high-skill economic activities.

Second, these communities reflect the historic impact of the Federal government. Federal regulation, subsidies, and economic policies after the Civil War facilitated the construction of a transcontinental railroad system that initially bypassed the South. By the time the region rebuilt its railroads and standardized its gauges, northern financiers purchased southern lines and finally integrated them into the national system, but at an economic disadvantage to southern shippers. Congressional legislation and Federal courts supported the consolidation of major industries, again to the detriment of the South. By 1900, the South had become the colonial, low-wage sector of the national economy. The New Deal transformed southern agriculture and provided much-needed infrastructure in some communities. World War II introduced jobs, infrastructure, technology, and rapid urban development into the South, all of which helped southern communities launch an unprecedented era of economic development and prosperity in the decades following the war. Federal civil rights legislation, environmental regulations, national trade policy, and the Federal tax structure continue to shape southern economic development.

Third, although the Gulf Coast may be one ecological region, each State that borders it reflects its own political culture. Of the three States in which the study areas lie, Texas has been the least "southern" and most prosperous. A State of the border South, rather than of the Deep South, Texas draws its heritage from both the West and the South. Although a loyal Confederate State, a bastion of one-party Democracy, and a follower of racial

segregation by law, Texas' economic diversity and the existence of major urban centers such as Dallas, Houston, and San Antonio, moderated the political excesses common in other parts of the South, especially during the 1950's and 1960's. That, and the political clout of natives sons such as Sam Rayburn and Lyndon B. Johnson, and more recently, of Dick Armey and Phil Gramm, have enabled the State to take advantage of Federal programs and legislation. The naval base at Ingleside is merely the latest example of Federal support that extends back to the beginning of the century with the funding of the Houston Ship Channel project.

Alabama, on the other hand, more closely resembles the prototype of the Deep South State where, as political scientist V.O. Key noted, the black-belt oligarchy ruled with unwavering firmness. That ruling elite concerned itself primarily with its own perpetuation. They kept taxes low to benefit property owners, promoted few State and local services, championed white supremacy to maintain racial solidarity, and promoted economic development as long as it maintained the status quo. Some of the economic, racial, environmental, and political problems in contemporary Mobile and Theodore, reflect this legacy (cf. Key, Jr., 1949).

Louisiana is *sui generis*. Like Texas and Alabama, the State experienced the burdens of one-party rule, white supremacy, and profligate economic development, but it did so with its own unique style. Its Cajun heritage, especially in south Louisiana, diverges from the evangelical Protestant cast of the rest of the South. It is a cultural entity within a cultural entity. The residents of south Lafourche are very much a cultural as well as a political community, much more so than Mathis, Texas or Theodore, Alabama. Yet, the legacies of minimal government, especially in education and infrastructure, and dependence on volatile economic activities still characterize this area, even if the steadfastness of the residents and their determination to stay diverges from the patterns in coastal Texas or Alabama.

Southern history, the legacy of Federal involvement, and the political culture of the respective States all have shaped the study communities. These factors continue to influence the development of these areas today and understanding them will help build a better future for these places tomorrow.

6.2 The Agricultural Landscape

Though some might think that globalization is a new thing for the southern economy, the South has been involved with the global economy since the first European settlements. This involvement has resulted primarily from the growth of staple crops. The relationship between agriculture and the world economy has been a wonderful thing at times for the South. White southerners were among the world's leaders in per capita income in the 1850's, largely as a result of cotton. But, as southern farmers have discovered periodically, world markets can be fickle, and can result in boom-bust cycles as devastating as those experienced by oil- and gas-producing communities today. Federal policies, especially those connected with the New Deal, softened the vagaries of international demand and, combined with out-migration and the manpower needs of World War II, encouraged mechanization.

Nonetheless, southern agriculture still remains susceptible to international demand, Federal trade and immigration policies, attacks on farm subsidies, and meteorological and ecological disasters.

The scale of southern agriculture has also changed. The small family farm has become an endangered species as corporate entities have increasingly taken over the agricultural sector benefiting from the economies of scale and new technologies. These changes are reflected in the increased size per farm and the decrease in the number of farms during the past 40 years. Farm workers often became industrial operatives, or left the area entirely. Those who remained on the land, primarily in truck crop areas such as Mathis, Texas, organized to improve their work conditions and eventually became a political force.

6.2.1 Louisiana Sugar

The wartime plight of Louisiana's cane growers has an oddly contemporary sound. With the Japanese occupation of Indonesia and the Philippines, sugar production there was curtailed. Sugar beet production in Europe was also disrupted by war. Imports from India, Cuba, and Puerto Rico were jeopardized by hostile seas. Florida and Louisiana remained as the most secure cane growing areas within the continental United States, and the commodity was in critical demand, not only for home consumption but as an ingredient "in the manufacture of many chemicals which find their way into finished products such as medicines, plastics, vitamins, drugs, explosives..." (Butler, 1973), items needed for war. Thus, in 1944 the President suspended the production and marketing quotas established by the Sugar Act of 1937. Growers could plant as much as they could harvest and process. There was a labor bottleneck, however. Louisiana agricultural officials estimated the labor demand as 25,000 field hands and 5,000 factory workers (Butler, 1973).

In the 1940's, much of Louisiana's cane was still hand-harvested and hand-loaded. The military draft had removed some of the farm labor force; the higher wages in wartime industry attracted more. But the exodus from rural areas in the South had already begun in earnest during the Depression. The American Sugar Cane League was in the forefront in the search for adequate supplies of labor, and one of its first suggestions was the use of prisoners of war (POW). War Department regulations at the time -- 1942 -- prohibited POW camps within 150 miles of any coast, encompassing much of Louisiana's cane country. Even if that regulation could be waived (it soon was), there were housing problems. At a meeting of the Sugar Cane League in early 1943, its president noted that "the type of houses found on the plantations were unsuitable for housing prisoners according to standards established by the army" (Butler, 1973).

Alternative supplies of labor were explored. The use of high school boys was raised with local school officials; Lafourche Parish's superintendent noted that he only had 400 of them enrolled throughout the parish. The now-common practice of "outsourcing" was studied. Historian Joseph Butler, Jr. of Thibodaux notes of one of the Cane League's meetings:

> Importing labor from Puerto Rico, the Bahamas and other West Indian isles was another consideration. However, those in attendance were informed that the islands controlled by Great Britain did not allow their citizens, mostly Negroes, to work in areas where "Jim Crow" laws or segregation existed. This, of course, eliminated any possibility of importing laborers from these islands to south Louisiana (1973).

Mexican labor was already committed to other farming regions by the United States Employment Agency. Local welfare officials offered to cooperate by automatically reinstating willing workers to the relief rolls once the harvest was over. The Unemployment Insurance Division promised the growers to curtail unemployment compensation to any of their able-bodied clients who would not work in the cane fields. With help from the Louisiana senators, however, the Cane League managed to impress upon the army the dire need for captives. Camps were established in 1944 for prisoners close to the cane fields along Bayou Lafourche, at Thibodaux, Mathews, and Lockport. A thousand German POWs, paid $0.80 a day, got the cane in (Butler, 1973).

By the end of the war, most cane growers in Louisiana fully recognized that such temporary solutions to their labor needs were not viable. When returning veterans did not return to the cane fields, the pressure to mechanize intensified.

6.2.1.1 Sugar's Geography

The modern Intracoastal Waterway, comprised of nineteenth century canal company routes, natural lakes and the U.S. Army Corps of Engineers' own dredged and straightened segments, bisects Terrebonne and Lafourche Parishes. People south of the canal refer to those to the north as "Yankees." There is some historic truth to this observation. When the French-speaking Acadians were expelled from British-controlled Nova Scotia in 1755, many of them settled the bayous and marsh land of south Lafourche and south Terrebonne, occupying much of the firm ground along the natural levees of the bayous. When the United States negotiated the Louisiana Purchase from Napoleon in 1803, the new territory was gradually opened up to public land settlement. Much of the arable land along the Mississippi was already under the control of French planters, and the territory west of Bayou Teche remained under Spain's control, not included in the Purchase. Geographer John Rehder recounts the peopling of the sugar bowl:

> Attracted by cheap, public lands of Terrebonne Parish, the lower Teche regions, and the backlands of the upper Lafourche, the Anglos came in, some as land speculators, others as would-be planters. Between 1812 and 1850 they entered southern Louisiana by water, traveling on the Mississippi and on the western bayous. The rich, arable lands which they found available along portions of these waterways thus became the initial plantation sites where Anglo planters settled (1973).

There is a northern boundary to Louisiana's sugar region, set by the physiological limits of the tropical crop. It is delimited roughly by a line encompassing a growing season, before the first freeze, of 250 days. There is a southern limit, defined by the extent of drainable land on the natural levees of the bayous, narrowing from 3 miles to less than a quarter mile wide below what is now the Intracoastal Waterway (Rehder, 1973). The area from Houma north to Schriever in Terrebonne Parish, then from Thibodaux south to Mathews and Larose in Lafourche Parish, is an agricultural landscape, and sugar is preeminent. There have been periodic attempts to farm the available lands to the south, but these have been increasingly tenuous: south Lafourche and south Terrebonne are oriented to the products and the prospects of the maritime landscape. Historian Thomas Becnel gives a description of this later landscape, following the Army Corps of Engineers efforts to connect the Intracoastal at Houma to the Gulf of Mexico:

> The ship channel, built at the behest of local businessmen, has served the interests of the modern seafood and oil industries well, but it has caused ecological problems by facilitating the flow of salt water into the fragile brackish coastal marsh. The intrusion of salt water into formerly freshwater marsh has contributed to the destruction of Louisiana's delicate coastline. Wetlands in Terrebonne have deteriorated rapidly. Tropical storms send tidal surges, walls of water sometimes 15 feet high, far into the interior of the parish via man-made channels... Local political leaders have asked the U.S. Corps of Engineers to study the problem (Becnel, 1989).

Louisiana's sugar landscape, like its marshes, has a history of Federal intervention -- often at the bequest of local businessmen. The prototype of U.S. sugar policy is the 1934 Jones-Costigan Act, although some form of domestic protection from imports has been in existence for 200 years. The 1934 Act and the many subsequent revisions were designed to protect domestic growers and ensure that domestic demand is met substantially by domestic supply. An amendment to the Agricultural Adjustment Act of 1933, the Sugar Act "divided the market among domestic and foreign producers, allocated quotas among various processors, adjusted production in accordance with quotas, levied a processing tax on sugar, and ensured equitable division of returns to sugar growers and to farm workers" (Becnel, 1980).

The processing tax on domestic and imported sugar funded benefit payments to growers if they adhered to their assigned quotas and acreage limits, paid "fair and reasonable" wages -- as determined by the Department of Agriculture -- to their workers, and did not employ child labor (under 14 years). The 1934 Act, however, came too late to save several of the ravaged plantations of Terrebonne Parish.

The sugar industry in Louisiana had been pushed to the brink of extinction in the first two decades of the twentieth century by a series of diseases -- mosaics, red root, root rot leaf borers -- and by a period of unprotected sugar imports following World War I. Production per acre fell from 19 tons in 1911 to 8 tons by 1926. Acres under cultivation fell from 300,000 to 73,000 in 1927. The population of the sugar parishes was less in 1930 than in

1900, as workers, largely black, moved out. The commodity's historian described the landscape on the verge of the Great Depression:

> The Louisiana sugar country in the 1920's presented a striking contrast to the prosperity it had once known. Abandoned plantations containing fertile lands now grew up in briars and beyond repair, small towns and villages slowly succumbing to economic death -- these were the visible signs of the depression in the industry upon which the entire region depended. Whether or not the forces of recovery, even should they be launched, could rescue the area from this paralyzing stagnation only time could tell (Sitterson, 1953).

6.2.1.2 The Terrebonne Project

Franklin Roosevelt's Farm Security Administration (FSA) availed itself of Depression foreclosures to acquire bankrupt sugar plantations near Schriever, La., in 1937. The FSA was an outgrowth of the Federal Emergency Relief Administration, the Division of Subsistence Homesteads, and the Resettlement Administration, all of which sought to address the desperate plight of sharecroppers, tenant farmers and migrants during the crisis of the 1930's. The intent of the New Deal program was to resettle farmers from cutover and other marginal areas onto subsistence homesteads and rural villages. According to historian Louis Rodriguez, "It was hoped that such a program would eliminate agricultural surpluses, increase the number of residents in semi-rural surroundings who would be learning to cultivate a pioneering independence, and partially decentralize the great cities with their social ills" (Rodriguez, 1967).

The "Terrebonne Project," one of 150 resettlement projects in the country, emerged from the lands of four plantations between Thibodaux and Houma: Waubun, St. George, Julia, and the Isle of Cuba. Of the 6,000 acres acquired, about half was cultivatable, but fell under the cropping restrictions and quotas established by the Agricultural Adjustment Administration. Only 700 acres could be planted in cane -- this restriction would be a primary cause for the project's ultimate failure. Much of the rest of the land was cutover cypress swamp.

The philosophy underlying the Terrebonne Project was ambivalent from the start. The vast majority of the resettlement projects were designed to establish family-sized individual farms; Schriever's project became an experiment in collective farming, which some locals quickly labeled "Little Russia." FSA officials objected to the analogy to Soviet collective farms, but recognized that cane production was carried out most successfully, with tractor power, on large-scale units. In effect, the Terrebonne Project was to replicate the plantation system. However, in laying out the project, the FSA scattered homesteads on 40-acre parcels, betraying second thoughts that a collective farm may prove impractical (Holley, 1970).

Eighty families were to be selected to receive a house, barn, and 4 acres for private gardens, and were to provide labor, as machinery operators or field hands, for the cane on communal

lands. Sixty eventually joined the Project, coming primarily from Terrebonne and surrounding parishes and from northern Louisiana, according to one of the project member's descendants [LA-TM-006]. Some screening apparently attended the selection process:

> ...special preference was given to young married couples with reasonable education who had reached adulthood since the beginning of the Depression... A.D. Roberts, family selection specialist, stressed that applicants should be enthusiastic about the cooperative idea, because a person with strong individualistic tendencies would not fit into the program. Even in the face of a shortage of project families, Roberts' office refused some applicants because they showed signs of being "rugged individualists" (Holley, 1970).

Each family became a member of the Terrebonne Association, Inc., the cooperative's management entity, and received a home built to FSA specifications:

> They had two to three bedrooms, living room, kitchen, dining room, and screened side-porch. The house plans did not include indoor plumbing, but they contained a storeroom which later could be converted into a bathroom... Including house, barn, poultry house, water cistern, two mules, two cows, corn crib, tool shed, and fencing, the cost of each homestead averaged about $2,600 (Holley, 1970).

Many of these houses are still occupied along Project Road in Schriever. The Terrebonne Project itself was liquidated in 1944 by the FSA after successive years of financial losses. Twenty of the 32 families remaining on the project at the time purchased their homes and lands from the government; other area farmers acquired some of the land, and the Arkansas Fuel and Gas Company leased the balance for its mineral rights (Rodriguez, 1967).

George Harmount, a Yale graduate with no agricultural training, had been assigned by the FSA to oversee the operation. He reflected on the project after it was liquidated:

> The Association took over this property, which was then made up of four old run down plantations, [with] poor drainage, insufficient cane, potato or vegetable quotas... and for the last five years, at great sacrifice to themselves, fought their way upward, overcoming handicaps of floods, freezes, droughts, crop diseases, failures and faulty farm planning forced upon them (Holley, 1970).

The bureaucratic ambivalence surrounding the Terrebonne Project -- a collective, mechanized operative comprised of family-farm parcels -- presaged the post-war history of the Louisiana sugar region. Sociologist T. Lynn Smith puts it succinctly:

> ...the remarkable development of motors and machines... coupled with national agricultural policies of allotments and systems of benefit payments that grossly

> favored and heavily subsidized the large producers... has served to force the small general and subsistence farmer from the land (Zachetmayr et al., 1983).

6.2.1.3 Other Sugar Issues

In the 11 parishes of the Louisiana sugar bowl, there were 9,997 farms in 1940; in 1978, the number was 2,389 (Zachetmayr et al. 1983). The neo-plantation economy of the post-war years was already shaped by the early 1950's. Farms greater than 500 acres constituted only 2 percent of all farms in the region, but accounted for over 40 percent of cultivated acreage; 76 percent of farms were under 50 acres, but worked only 16 percent of the sugar lands (United Packinghouse Workers-CIO, 1955). The larger farms employed outside labor, at wages set by the Department of Agriculture on the basis of production-cost data supplied by the large growers. The United Packinghouse Workers of America (CIO) perennially attempted to get such wages raised, arguing that such raises would benefit family farms as well as field workers on the large operations:

> ...the small farmer would be helped. The 1950 Census data indicated that out of 8,450 farm operators, 3,083 work on other farms or industrial plants for part of the year. Some may even do field work on other sugarcane fields. But even those who do not do outside work in the cane fields will benefit, since higher pay in cane fields cannot help affecting the wage level throughout the area.
>
> The small cane farmer therefore would, in fact, gain by decent wages to field workers. The larger farms would, of course, be affected. Such farms are in a much better position to pay higher wages.
>
> Perhaps no additional proof is needed to support our contention that the larger cane farms in Louisiana, *that employ practically all* the hired labor are highly profitable, and that low wages paid hired labor makes it impossible for the small, family-type farmer to compete with the sugar plantations and corporations, and the rapid disappearance of the small farms (United Packinghouse Workers-CIO, 1955).

Organized by the National Agricultural Workers Union (AFL), field hands attempted to force the wage issue with a strike at harvest time in 1953. The "cane mutiny" against four of the largest growers in Lafourche, Terrebonne, and neighboring parishes ended with a court injunction against the picketers, which the union did not have the financial means to challenge. The rhetoric of the American Sugar Cane League had prevailed:

> Collective bargaining in agriculture would give a few the power to control the food supply of the nation, and thus control the nation itself. A widespread strike in agriculture would so adversely affect the welfare of the public that the welfare of organized labor would be jeopardized by public reaction (Cook and Watson, 1985).

Not coincidentally, a bill to prohibit union shops was first passed in the Louisiana legislature in 1954, authored in part by Cane League attorneys. The AFL-CIO quickly moved to get the "right-to-work" law repealed, by crafting a compromise with rural cane interests. Union leaders decided to abandon the farm labor sector in the hopes of retaining union shops in the craft and industrial sectors. The compromise worked and, for another 20 years, no comprehensive right-to-work bill succeeded in Louisiana. For a time, Louisiana would retain its reputation as the "Red Spot on the Gulf Coast," an illusion to the apparent strength of its industrial and craft unions, won at the expense of field hands (Becnel, 1980).

However, anti-union sentiments crystallized in the wake of a violent strike at the Jupiter Chemical Company construction site at Lake Charles in January of 1976 -- with AFL-CIO leaders battling those of an independent union -- and right-to-work legislation was signed by Governor Edwin Edwards in July 1999. Analysts point to the cane mutiny and subsequent events as the seeds for this change:

> The 1956 betrayal of the agricultural workers was indicative of the limitations and narrowness of vision of the Louisiana AFL-CIO. The victory of "Right-to-Work" was so easy precisely because many working people did not see the AFL-CIO as the champion of the Louisiana working class... Without the political support of these people, the political clout of the State AFL-CIO was ultimately hollow (Cook and Watson, 1985).

By the 1970's in the sugar bowl, the issue of unions for cane workers was largely moot. The decadal census listed 454 farm laborers in Lafourche Parish, and 284 in neighboring Terrebonne (Becnel, 1980). Cameco Industries, Inc., founded in Thibodaux in the mid-1960's to build cane harvesters and tractors, would employ more workers by the 1990's than were found in the cane fields.

Cameco Industries specializes in cane billeters, mechanical harvesters which chop cane stalks into short segments, blow off the leaf trash, and load the billets directly into accompanying trucks. At a cost of $200,000 each, the harvester is gradually replacing the wholestalk harvester which, as early as 1946, was cutting 63 percent of Louisiana's cane (Burrows and Shlomowitz, 1992). The wholestalk harvester works well on straight cane: it slices off the sucrose-deficient and leafy tops of the stalk, cuts along ground level, and heaps the cane behind the machine. The heaps are then burned to remove excess trash and loaded in wagons for transport to the mill. The wholestalk harvester does not work well on lodged cane, and local farmers would have been devastated by Hurricane Andrew had not the billeter been available to collect the flattened cane [LA-MN-027].

The machines -- first the wholestalk, then the billeter -- have changed the social landscape of Schriever and the rest of the sugar bowl. To amortize the cost of a machine used only a few weeks a year at harvest, farms have increased in size. A single grower needs 1,000 acres for a profitable operation [LA-TM-026]. And the new machines are sophisticated, necessitating

fewer but more highly-trained operators: "You can't put minimum wage workers on such expensive equipment" [LA-MN-030]. The workforce in the cane industry -- machine operators, truckers, mill workers -- is largely drawn from the local area, many with multi-generational ties to the industry, some with brief experience in oil work. Those who have worked both oil and cane express a preference for farm work: the pay is equivalent to a roughneck but the commute is shorter. As one mill worker explained, "I don't get too muddy and I get to go home for dinner" [LA-MN-031]. Sugar work is steady as well: year after year, there is always a crop that needs cultivating, harvesting, and processing.

The industry, however, is by no means buffered from outside events. Sugar mills are large users of natural gas in boiling operations, and the high cost of the fuel in the 1970's put a number of mills out of business [LA-MN-037]. Many of the remaining sugar mills are cooperatively owned by groups of growers. Mills process members' cane and purchase additional product from individual farmers, paying out 62 percent of the value of the cane, based on weight and sugar content, and retaining the balance for processing costs. Farmers who are leasing land from other owners, in many cases oil companies and insurance firms, on a share system, give the landowner 20 percent of the gross value of the product [LA-MN-023, 040].

The American Sugar Cane League, once concerned largely with assuring an adequate and tractable workforce, is now struggling to assure that the "gross value" of U.S. cane -- the farm benefit package of the Sugar Act and its successors -- is maintained. This support system, under constant attack, is set to expire in 2002, and there is fear that a free-trade ideology will be imposed on the commodity. The U.S. Department of Commerce's International Trade Administration has sketched the lines of the coming debate, at home and abroad:

> The sugar program has had the following major detrimental effects on the United States: (1) maintained the domestic price of sugar at several times the free-market level; cost consumers over $3 billion annually; (3) encouraged a 40 percent per year increase in imports of some sugar-containing products competing against domestic goods; (4) caused a 40 percent reduction of the U.S. sugar refining industry; and (5) displaced about 12,000 jobs because imports of products containing world-priced sugar captured U.S. markets and encouraged offshore investment, and because of the job loss in the refining industry.
>
> The sugar program has caused considerable hardship in many developing exporting countries. Because the U.S. quota has been cut to less than one-third of its original level, these countries have experienced lower production and increased unemployment, and have had to implement costly support programs (Ives and Hurley, 1988).

While the future of the sugar industry will be largely determined by government farm policy, the value of the landscape in Terrebonne and Lafourche parishes may once again come from what lies underneath. With the development of 3-D seismic technology, greatly enhancing the precision of petrochemical exploration, the area is seeing new oil plays. This is gauged by the frenzied levels of activity in parish recorders' offices.

Before the seismic crews "shot" the land around Schriever and Thibodaux, some 100 square miles of potential oil fields, it had to be abstracted through parish records. In the last few years, an army of abstracters has been assembled, a workforce not unafflicted with the "warm body syndrome," people being pulled off the street with little or no formal training. And the title searches have to be made through a complex web of Louisiana land laws and tenure arrangements. Vast acreage of State land over the years has been leased by land companies, oil firms, insurance holdings, and, frequently, politicians (Becnel, 1995; Williams, 1969). The Louisiana Land and Exploration Company (LL&E), incorporated in Maryland, was at the forefront of the speculative boom in the 1920; its annual report for 1928 delineates the extent of its holdings:

> The Company has fee title to approximately 600,000 acres and holds under mineral leases approximately another 1,400,000 acres of land and water bottoms -- all in the State of Louisiana, extending along the Gulf Coastal Plain from near the Texas State line on the West to a point South of New Orleans (LL&E *Annual Report,* 1928).

The Texas Company -- eventually Texaco -- did the initial exploration and production work on LL&A holdings, but other large oil outfits quickly got involved and retained mineral rights long after the production declined and halted. On State lands, which include all river, marsh and swamp land that could be construed as "navigable" (cf. Steinberg, 1995), oil companies paid royalties to the State. On private lands, ownership was more complex; subsurface mineral rights are severable from surface ownership, and the record of such transaction is what the abstractors are now after in the parish courthouses.

An owner typically might turn over the exploration rights to an oil company for 10 years. If his title transaction showed that he had negotiated to retain a "landowner royalty interest," he would receive a 1/8th share in royalties if a well produced. However, if he kept a "working interest," he would stand to gain a 7/8th share, but was responsible for sharing the exploration and production expenses. If no producing wells are drilled in 10 years, the mineral rights revert back to the surface land owner.

To complicate matters, Louisiana's civil law, based on the Napoleonic Code, codifies "forced heirship," in which a percentage of family land is inherited by each offspring. Along Louisiana watercourses, land was parceled by the French "arpent" or long-lot system, whereby an owner would acquire, typically, an 8- or 10-arpent piece (1,536 to 1,920 feet) of land, fronting and extending back to the marsh or backlands some 40 arpents. With forced heirship, successive generations of family members have divided up these tracts, again

retaining a sliver of bayou frontage and the balance of the long lot back to the marsh. Now, each 10-arpent wide lot may be divided numerous ways on the surface, its mineral rights severed in several arrangements as well. Abstracters had to determine all this before the 3-D seismic crews went to work.

A land-title researcher describes the recent exploration in Terrebonne and Lafourche parishes:

> The seismic crews set out a series of parallel lines of explosive charges on the ground, 1,000 to 2,000 yards apart. There were people running all around, all over everything. Helicopters flying all over. The 3-D people were pushy; they don't understand abstracting; they don't have to deal with the landowners like the oil companies do. They were there to get in and get out [LA-TM- 014].

But the same commentator allowed that 3-D technology was good for the State. With the assurance of identifying prospects, it provided the opportunity for small companies to take the lead in exploration, then partner up with the big companies for development. The big firms had by now become "dinosaurs:" they were slow to explore the land-based potential of their holdings, and in many cases had little knowledge of what they still owned or leased.

Historically, lease payments and royalties saved some of the region's sugar plantations from foreclosure (Wurzlow, 1986) and according to Thomas Becnel, "oil rescued Terrebonne and other coastal parishes from the brunt of the Great Depression; no soup lines formed in Houma during the worst years of the 1930's" (1995).

Oil and gas may again be called upon to buffer the parishes if Congress revisits U.S. sugar policy.

6.2.2 Race and Class in Texas Farming

Governor George W. Bush declared an emergency across two-thirds of Texas in March 1999, enabling farmers to apply for Federal aid. He said, simply, "I think we ought to pray for rain." The State's Agriculture Commissioner added: "Agriculture is truly in peril... They simply cannot make it when you have drought coupled with low and falling prices." It was the third drought in 4 years:

> Farmers and ranchers, still struggling from last year, are reporting problems. Boll weevils, beetles that destroy cotton, are proliferating because cash-strapped farmers cannot pay for eradication. And hay for livestock feed is in short supply (*Arizona Daily Star* March 12, 1999).

Farmers in San Patricio County felt the full effects of the droughts, even if Walter Prescott Webb's imprecise geography would have spared them. The historian, writing in the 1950's in support of a scheme to import water into the Coastal Bend, observed:

> From Corpus Christi south, the Gulf Coast is the land of Isaac, rich but very short of water; north and east of Corpus Christi is the land of Abraham, and Abraham is long on water, has more than he needs, more than he can use. For the purpose of borrowing water from the land of surplus for the land of deficiency, the Gulf Coast area is again fortunate in that it is a level coastal plain sloping gradually to the very edge of the salt water. There is not in the whole Gulf Coast area any formidable topographic irregularity -- no mountains, gorges, hardly a hill. Here the engineers can do what has not been done before in Texas, what cannot be done elsewhere. They can bring water from the humid land to the arid, bring it in abundance, and at reasonable cost (Webb, 1954).

Now, Webb's plan is much closer to reality. The "Trans-Texas Water Program" (HDR Engineering, Inc., 1995), however, is designed to relieve the municipal and industrial needs of Corpus Christi, not the agricultural needs of San Patricio County farmers on the north side of the Nueces-Corpus Christi Bay. Some of these farmers are descendants of the area's original Irish immigrants.

6.2.2.1 Origins of San Patricio County

Under the auspices of the San Patricio County Historical Commission, Keith Guthrie (1986) has compiled an official history of the county. After a brief tribute to the original inhabitants of the area, the annihilated Karankawas, he takes up the story with Mexico's independence from Spain in 1821. Seeking settlers for its frontier States, the Mexican government instituted colonization programs by which individuals -- "empresarios" -- were awarded contracts to recruit immigrants. John McMullen and James McGloin, two Irishmen, received such a contract in 1828 to settle 200 Irish Catholic families along the Nueces River. They took out advertisements in eastern newspapers, appealing to newly arrived Irish immigrants. A family was eligible for a league of land -- 4,428 acres. The recruitment efforts were successful, and they brought their party by ship to the Gulf Coast and moved to the mission at Refugio, east of their allocated lands along the Nueces. Guthrie continues:

> Shortly the families began to move from Refugio to the banks of the Nueces River to a fertile, flat valley that sloped down from bluffs that gave a sweeping view of the valley. This view must have stirred emotions of home in the hearts of McGloin and his party as they looked out over the valley that was as green as any in Ireland and was to be all their OWN!. They named their city Villa de San Patricio de Hibernia, in honor of Ireland's patron saint (Guthrie, 1986).

He adds, briefly, that "...it was thought that the Mexican ranchers, known to be present in the area, gave some aid and comfort to these first settlers of the lower Gulf Coast" (Guthrie, 1986).

The stay along the banks of the river would be quickly interrupted as Texas' own battle for independence took place over much of the area. San Patricio was burned and abandoned, and designated a "depopulated area" by 1835. Settlers would return to the site in 1845 when Texas was annexed to the United States and General Zachary Taylor brought his army there to enforce peace and conduct war against Mexico. New waves of immigrants would arrive, starting in the late 1840's with the promise of land, and continuing through the nineteenth century. Thomas Henry Mathis, born in Tennessee in 1834, was not untypical of such arrivals. Guthrie recounts the story of the entrepreneur who would donate land for the town he would name after himself in the western part of the county. He was educated in Tennessee and Arkansas, taught school in Kentucky and owned his own school in Murry, Ark. He traded horses and served as a soldier in the Confederate army and with the U.S. rangers. He also ran the Union blockade, importing tobacco into Texas from Kentucky. Additionally, he was a steam line agent for the Morgan line as well as an industrial promoter (Guthrie, 1986).

He was also a fairly unsuccessful cattleman:

> Mathis was a partner in the Coleman, Mathis, and Fulton Cattle Company which was dissolved after an 18 month drought. By mutual agreement the partnership gave Fulton the land in the eastern part of San Patricio County with J.H. Mathis getting land in Goliad County and T.H. Mathis getting the 24,000 acre Henry Bend Ranch (Guthrie, 1986).

In 1887, Mathis offered part of the ranch as right-of-way to induce the San Antonio and Aransas Pass Railroad to extend their line into the Rio Grande Valley. The town of Mathis got another line through it in 1912, and began to take on an identity as a railhead. Guthrie captures the town's early optimism:

> The year 1913 was significant in many ways, for it was in that year that the first Chamber of Commerce was organized with 94 members and $300 in cash in the treasury. R. Gillet was elected president and C.B. McAnally secretary. A motion was made by William Coffin, "that the fence should be taken down, and the town should be taken out of seclusion." The slogan for the CofC was: "Mathis is as Good as the Best and Better Than the Rest" (1986).

6.2.2.2 Mathis, Texas

There is an Hispanic side of the agricultural landscape of San Patricio County that is not captured in Keith Guthrie's authorized history. It is seen in its starkest form in Mathis.

On February 11, 1958, Dr. Hector P. García, founder of the American GI Forum, sent a trenchant communiqué to the then U.S. Secretary of Labor, James P. Mitchell, requesting that he come to the Coastal Bend area of south Texas and see for himself the deplorable human condition of Mexican-American workers there (Garcia, 1958). The letter is essentially a litany of economic and social inequalities ranging from wage disparity to glaring gaps in educational opportunities for Hispanics. It was intended to shock. And shock it must have, because barely 2 years later the minimum wage topped out at one dollar an hour, up from fifty cents.

García made explicit mention of Mathis, 35 miles north of Corpus Christi. He used it to contrast the shallow roots of Mexican-American migratory families with the Mexican bracero worker who, under binational agreement and contract with local growers, was not only completely mobile, but also enjoyed a competitive advantage by way of Federal subsidies (García, 1958). Forty years later, the doctor's words maintain their poignancy. They paint a picture of ethnic strife interwoven with local, national, and international politics. They also illustrate how class, continuously redefined, is both superimposed upon and articulated with the past in rural south Texas. Here we attempt to construct a historical baseline for documenting labor trends in the town of Mathis since World War II.

With the United States deeply embroiled in World War II, the demand for foodstuffs increased dramatically. Agrarian economies, like that of Mathis, stood to reap substantial reward. The town's packing houses, located along north-south/east-west railroad axes since the 1900's, enjoyed an infrastructural advantage over other parts of San Patricio County (Guthrie, 1986). But who would be around to really enjoy the windfall? The war also required souls, like that of Fernando Corona who, along with 20 compatriots, was shipped overseas to fight with the 36th Infantry Division. "I saw a lot of injustice," he says, thinking about his tour in Africa. "A lot of workers went (into the draft). Lots of men from Mathis" [TX-JB-012]. The war effort created a cash surplus for growers and, paradoxically, a labor shortage which demanded immediate attention. The answer lay on the other side of the border, a mere 150 miles south of Mathis.

On August 4, 1942, the United States signed the Bracero Accord with Mexico. The agreement, in essence, secured a consistent, low-wage, highly mobile, stoop labor force for growers mostly throughout the U.S. Southwest. It also set forth provisions for housing, transportation, health care, work shifts, wages, and recruitment. In the language of the accord, the minimum wage was set at no lower than $0.50 per hour and, of course, it could exceed this amount. It rarely did. In fact, these stipulations were often summarily ignored by growers and unsympathetic program administrators. Salaries remained suppressed, health care minimal, and housing was often skeletal and insalubrious. Racism was so notoriously widespread in Texas that the Mexican government finally blacklisted the State, thereby refusing to send more laborers. But undocumented workers were always in high supply and eager to take up where braceros left off. Their numbers equaled or just barely superseded

those of the braceros themselves, about 5 million over a period of 26 years (Samora and Vendel Simon, 1993).

For domestic workers, the collateral economic and social costs introduced to the region were arresting indeed. Wages, low to begin with, remained utterly suppressed. Soldiers came back from the war to find their options even more limited than before. Packing house jobs often paid $0.15 to $0.20 per hour ($0.30 cents lower than the provisioned $0.50 minimum), field work usually paid even less. Braceros usually made just over this and enjoyed Federally-mandated (and often funded, though indirectly through growers) support [TX-JB-012].

Jobs in agriculture were available nonetheless, and circumstances were scarcely better for the Mexican nationals themselves. This was made clear in 1957 when workers filed suit against the F.H. Vahlsing Company, vegetable and cotton grower, for manipulating the scales to the detriment of braceros and local workers alike. Vahlsing was ultimately forced to pay $3,509.27 directly to the Mexican consulate in the names of the claimants, nothing, at least according to one Mathis resident, went to U.S. workers ([TX-JB-012]; McDonald, 1957).

The bracero program, through heavy lobbying efforts on the part of U.S. agribusiness, had far outlasted its original life expectancy when it finally ended in 1964. One of the primary reasons for its demise, according to some scholars, was the constant influx of undocumented workers from Mexico (Kirsten, 1977). In its wake the program left a bitter legacy of an anti-immigrant sentiment that to this day simmers in the minds of some Hispanic Mathesites. Many share the feeling that they had been slighted by undocumented workers, the Federal government, and growers, the latter profiting immensely from the perfect labor arrangement. One long-time resident complains, "People here don't have a job because of the wetbacks. Construction and farming have always been a problem here. The 'wets' work for $20 a day" [TX-JB-003]. This was not, however, the case with all informants. Though it was certainly hard to overlook the connections between the surplus labor, depressed wages and job insecurity, a retired local activist and his wife do understand that workers, regardless of nationality and legal status, shared similar hardships [TX-JB-014].

Shortly after World War II, workers began to recognize the need to organize. Compared to many other parts of the United States, Texas Mexicans had long been on the economic periphery. By 1920, south Texas had made the transition from a ranching regime characterized by sedentary vaquero and sharecropper classes, to the commercialization of social relations with Hispanics essentially "...reduced to the status of wage laborers..," many on what was once either their own land, or that which they sharecropped or farmed as tenants (the agricultural census for Texas shows a significant drop in these types of arrangements for tenants and sharecroppers they labeled as "people of color") (Montejano, 1977). Indeed, to this day some Tex-Mex families are engaged in legal skirmishes to recover land lost to Euro-American speculators. A Mathis resident recalled that, "Before 1940, there was not one Hispanic-owned store. We have always had poverty" [TX-JB-014]. But in contrast to past

social inequity, the relative prosperity of postwar America, at least in Mathis, had the collateral effect of galvanizing Hispanic resolve for political action.

Residents old enough to remember agreed that work in the 1950's and early 1960's was more plentiful and higher paid than it had ever been, despite stiff competition from bracero and undocumented workers. In 1956, the minimum wage rose to $1.00 per hour after at least 17 consecutive years (with the exception of 1945 and 1946) of declining real wages (Bortz, 1992). According to a county employee and long-time activist, those were indeed "boom" years, the only time in Mathis history in which Mexican-Americans regularly purchased property and houses [TX-JB-010]. In response to the growing demands of commercialized agriculture, since the 1920's Hispanic laborers had become steadily more mobile, with families working locally for 6 months of the year and following harvests from county to county and even State to State for the rest. According to historian David Montejano, commercialization was paralleled by the development of coercive labor practices employed by Anglo landowners who, by virtue of race privilege, had secured themselves squarely at the top of the local social hierarchy. Enforcement of vagrancy laws and debt peonage were two of the more popular techniques used to keep workers in town just long enough for the cotton harvest (Montejano, 1977).

Cotton continued to be the area's primary agricultural commodity and was indeed one of the biggest employers of local and bracero stoop labor. This antebellum truth remained unchallenged until cotton's mechanization, starting roughly in the late 1950's (Guthrie, 1986). Onions, watermelon, cabbage, and spinach were additionally important as staples of San Patricio County's agrarian economy, and also as the truck crops which kept Hispanics moving seasonally. Families set out for places as distinct as Michigan and Maricopa, Arizona, picking and packing crops as diverse as oranges and sugar beets [TX-JB-002]. Likewise, employment in Texas' Rio Grande Valley seemed like it would never slow. One resident estimates that, around the late 1950's, as many as 300 children from Mathis alone were going to west Texas with their families on a seasonal basis [TX-JB-014]. The season usually lasted about 6 months, roughly from March or April through October. This, along with the cotton harvest back home, was sufficient to maintain household economies for most of the year, barring, of course, any costly emergencies [TX-JB-009]. Hispanic Mathisites felt the ripples of a dynamic post-war economy.

With the growth of agribusiness in south Texas, as Montejano suggests (cf. Montejano, 1987), the social relations of production changed dramatically and rapidly. While this meant repressive labor practices and general exploitation for many Hispanic workers, it also opened up new opportunities where none existed before. Some of the more prosperous local actors were propelled into leadership positions. One official commented that the region had always been good for truck crops like onions and watermelon, and trucks came to play a very significant role in the earliest push toward Hispanic mobilization [TX-JB-011]. Another resident talks about those early years:

> I organized labor. Had trucks. Used to organize parties of about 60 men. At that time there were about 30 organizers picking up men. In those days there were people everywhere in the town, lots of camps. The growers built the camps. People were from here and the Rio Grande Valley. A lot of these labor organizers went to other places. After Mathis, people went to west Texas following cotton, vegetables. Then we came back. The kids always went to help. My father and I saved up for our first truck. It was an old truck but we survived [TX-JB-009].

What began as a logistical enterprise soon turned political. With the stepped-up demand for truck vegetables, a handful of Mathis driver/owners emerged by the mid-1950's as independent majordomos, or foremen, charged with providing a steady flow of field hands to local and even non-local growers. At least for some organizers, however, the relationship with growers was little more than fiduciary. These men were instead loyal to the field workers who, more often than not, were friends, wives, sons, brothers, sisters, or uncles. An activist comments that Hispanics became very unified back then [TX-JB-014].

The truckers, therefore, while profiting from their efforts to organize work crews, also appreciated the need for advocacy. Having saved up and purchased their own GMC Stakebed trucks, they enjoyed much more latitude in decision making and, by virtue of providing a crucial link in the production chain, these transportistas also held a strong bargaining chip with growers.

All of this later crystallized with the formation of the Farm Truckers and Farm Workers Association around 1956. Poverty, of course, was an important common denominator uniting locals. Work conditions, salary discrepancies, and general exploitation were the causes célébre on which formal organization marched forth, albeit slowly at first. Mexican nationals (braceros and undocumented workers) were at once incorporated into and disenfranchised from the movement for a variety of reasons ranging from political expediency to personal preference. This was clearly illustrated in 1958 when the Association called for an investigation of F.H. Vahlsing Co. on behalf of all braceros as well as Mexican-Americans. Truckers also pooled resources to pay for the poll tax, a very savvy political maneuver which would later open important doors to local participation. Perhaps the truckers' biggest impact, however, came in the form of consciousness raising. These men, often charismatic, also helped point out glaring discrepancies in Mathis society. They fingered the "problematica" and ultimately helped pave the way for Mexican-Americans to wrest political power from Anglos [TX-JB-010].

Other important events, local, national, and international, would shape the way Hispanics came to dominate local politics. Aside from a common heritage and similar economic circumstances, many Mexican-American males also shared a bond created under the exciting and horrific pressures of a world war. Likewise, women understood what it meant to keep family, town, and even country operating smoothly during a time of global upheaval. This also meant picking crops to support the war effort. World War II veterans and their wives

constituted a major driving force behind the social change that was about to take root in south Texas in the late 1950's and early 1960's (Montejano, 1987). Dr. Hector García, who served in Africa and Europe, spearheaded the creation of the GI Forum which eventually provided the economic and spiritual life blood to organizations like the Farm Truckers and Farm Workers. Several local residents met García during the war, and later collaborated in their drive to improve social conditions in Mathis [TX-JB-014]. In 1948, García was commissioned by the League of United Latin American Citizens (LULAC) to conduct a "fact finding" tour of south Texas, part of which concentrated on the Mathis area. His findings, briefly mentioned above, lent professional credibility to the cause. His organization later gave it crucial funding. This was especially true in the areas of workers' rights and education.

Education became one of the region's most hotly contested political issues (see Section 7). In 1957, as Mathis politics were just beginning to simmer, activists filed suit against the Independent School District for institutionalized discrimination. The plaintiffs claimed that it was "common custom that children of Mexican descent ... be segregated into classes and sections of classes which were established and maintained exclusively and solely for the attendance of the plaintiffs and other children of Mexican descent" [TX-JB-013]. The defendants included eight school district representatives, one of whom was Hispanic. The case was settled out of court, with the superintendent agreeing to allow children into classes "irrespective of race, color, or creed." Economic downturn, however, may have had as much to do with school desegregation as agency. According to retired school district superintendent, "Mechanical cotton pickers had more to do with gettin' people into the schools. It was a very different period of time. Some recognized it was goin' (seasonal work) and when they went west in May, they left their kids in school. By about 1956, the true migrant period was over" [TX-JB-013].

That was also the year the minimum wage rose to $1.00, and like most others interviewed, the educator saw it as the beginning of the end for Mathis' post-war economic vitality [TX-JB-013]. Moreover, higher labor costs articulated with weather to quicken the pace of recession. The relentless march of hurricanes along the coast of southern Texas since the turn of the century prompted historian Keith Guthrie to comment, "Storms are a way of life in San Patricio County" (1986). Hurricane Celia struck in 1961 causing $1.5 million in property loss. When asked why farmers began to mechanize cotton production, one fieldhand's wife suggests, "Minimum wage went up to about $ 1.00 an hour and, along with the bad weather, farmers realized how much money they could lose paying people. Picking cotton was much slower with laborers. The decision to mechanize was economic. Weather was very unpredictable. The year before last was very dry, bien seco, seco! And when there's a lot of rain nobody can get into the fields" [TX-JB-002]. A local official also attributes part of Mathis' economic downturn to the minimum wage hike and weather, noting that with higher labor costs, employers were able to contract fewer and fewer workers. Machines just made more sense in the face of unpredictable weather and escalating labor costs [TX-JB-011].

An Hispanic resident said that, very soon after the minimum wage hike, packing sheds began to close [TX-JB-010]. At one time Mathis had six such sheds along with three cotton gins. By the mid-1970's all (with the exception of one shed run by the Vahlsing Co.) were either severely battered, totally destroyed by Hurricanes, or merely defunct. A county official said that the bottom simply dropped out of the market [TX-JB-011]. Census figures support these assertions. In 1954, San Patricio County showed a total of 36 vegetable farms. This number plummeted to five by 1964, and later to one in 1974. Cotton and grains now dominate the rural landscape of San Patricio County

6.2.3 Azaleas and Sod in South Alabama

> "Mobile -- a pleasant cotton city of some thirty thousand inhabitants -- where people live in cotton houses, eat cotton, drink cotton and dream cotton. They marry cotton wives, and unto them are born cotton children" (a visitor to Mobile in 1858, Amos, 1985 and Goldfield, 1991).

Historians Harriet Amos and David Goldfield invoke the description of antebellum Mobile by a British visitor to underscore the dependence of the city on the countryside -- a collection point for cotton grown in the interior, a shipping point to textile mills in the north and in Europe. In the New South of south Alabama, the relations between country and city have changed. There is dynamism in two specialty niches, both serving urban clientele. These are flowers and grass, the organic accouterments of city life. The agricultural landscape of the two counties had been dominated by citrus until killing freezes through the mid-1930's discouraged that risky endeavor. It had then been dominated by pecan orchards, until Hurricane Frederic finally leveled most of them in 1979 and the flight to suburbia made aerial spraying increasingly contentious. That landscape is now witnessing a return of cotton, with the development of growth-suppressing chemicals which reduce foliage and increase bowls. And, to a much greater degree than in the Sugar Bowl and the blackland prairies of Coastal Bend, there is diversification, as farmers, large and small, adjust their crop mixes to play real and potential markets, respond to climatic variability, and take advantage of government subsidies for one commodity or another.

The turfgrass and the nursery industries, however, are where the contemporary growth is taking place. The Mobile Chamber of Commerce, not unexpectedly, waxes poetic about the region's passion for plants:

> Horticulturally, the month of March titillates the senses. It begins with the shyness of a first kiss, and by mid-March it is bursting forth... 'In gardening, one's staunchest ally is the natural lust for life each plant has, that strong current which surges through everything that grows' (McDonnell, 1994).

The nursery industry has historic roots in the Mobile area, starting up in the 1920's to provide stock for pecan and citrus groves. One operator traces the growth and current activity of one of Baldwin County's larger ornamental businesses:

> The industry started in the 1920's in Mobile. There were big nurseries in the Semmes area [northwest of Mobile]. Then, during World War II, the Japanese owner returned home. Many of his workers went out and started their own nurseries. In our case, it all started as Rich Morris's hobby: camellias. They were the rage among the social elite of Mobile. He cultivated evergreen azaleas for personal use. He was an attorney with properties everywhere. The nursery is still in the family -- third generation. In 1938 they had a surplus and made $100,000. The second generation saw this as a career. There was a big post-World War II boom. People were getting government loans for housing; lots of construction in the 1960's and 1970's. Cities like Dallas and Atlanta had insatiable appetites for plants.
>
> Our market extends from West Texas to the Ohio Valley. Big nurseries in Los Angeles are shipping across the country. At first Atlanta was our big market, now the local market is much bigger. It has really picked up in the last 4 or 5 years. It's mostly residential, but you can't discount commercial: golf, condominiums...
>
> We've got a lot of competition. Until the 1980's it was very profitable. Now it's not the case. The government has become the perfect parasite. They know just how much to extract and still leave you with hope. The perfect parasite leaves you viable. After all, isn't a public toilet more important than an azalea? [AL-JB-002].

The nursery business is labor-intensive, and creative in meeting this demand. As the same operator explains,

> In terms of labor, we've traditionally had a good blend -- well balanced with blacks, whites, males and females. Our labor requirements are much greater than supply. We are contracting with the prison for one-third of our workers. Two years ago we built Latino housing. One-third of our force is Hispanic males.... They are mostly Mexicans, but we also have Nicaraguans, Salvadorans, Cubans... We used to recruit Latinos originally, but then it sort of flowed on its own. We try to play by the rules as much as possible. I don't think there are a lot of undocumented workers employed here [AL-JB-002].

The "rules" for migrant work are those established under the "H2A" visa program in 1986. Wages are set by the Department of Agriculture, and working conditions are monitored by the Department of Labor. According to one labor recruiter, who receives a fee of $130 per worker from the employer for handling the legal documentation, workers get free housing and utilities, transportation to the work site, and workman's compensation for on-the-job

injuries. He estimated that he recruits 12,000 workers a year under the program [AL-JB-021].

The other significant source of labor used in nursery work is Alabama's corrections system. The overseer of one of Baldwin County's prisons explains its operation:

> This was a road camp years ago and then it reopened as a road camp again. There was a lot of public outcry about chain gangs, so they turned it into a work release facility. We have a suggested count of 439 inmates. They work in restaurants in Gulf Shores, 30 are workin' in potatoes. [A nursery] is the biggest single employer. The inmates are mostly makin' minimum wage and sometimes above....We opened because of the possibilities that the labor shortage presented here. We saw a profit. This facility only houses minimum and community custody prisoners. They can't have committed sodomy, sexual crimes, you know, violent crimes [AL-JB-010].

The sod industry in Baldwin County is of more recent origin, supplying the landscaping needs of residences, golf courses, and urban office complexes and retail outlets. Its labor requirements are more seasonal than those of nurseries. Details of one of these enterprises provide a brief overview:

> My grandfather raised hay and cattle for many years. Over the years the cattle business became harder and harder. It became more of a tax write-off than anything. We started sod in 1984. Frederic wiped everyone out in '79. My uncle got into sod. There was so much building going on. It was really good for us.
>
> We've raised our prices steadily. Our profits are high. Fertilizers and chemicals, seed costs, fuel -- these are our biggest expenses. Labor costs are not all that high. It's all local labor -- most of us are family or high school friends... Summer is our busiest time -- we hire lots of high schoolers.
>
> It is so hard for people to make money row croppin'. And there is better money in sod. Without large amounts of land, you really can't make it as a row cropper [AL-JB-005, fieldhands at sod operation].

6.2.4 Oil, Agriculture, and the World Order

South Alabama's specialty farmers, those growing flowers and sod for markets driven by aesthetics and leisure activities, are prospering. Louisiana's sugar producers and their lobbyists have prevailed upon a compliant Congress, so the cane-covered landscape of the sugar bowl has, by and large, remained intact. Most of the South's, and the country's, farmers, however, have been exposed directly to macroeconomies and geopolitics. Historian Richard White (1991b), writing about western America, has surveyed the local and global forces that apply to much of the South's agricultural landscape as well.

Following the severest farm recession since the Great Depression -- from 1969 to 1971 -- large farmers began to prosper in the early 1970's in response to expanded internal and international markets for grains. The Soviet Union and developing countries were increasing their purchases; widespread crop failures in Asia and Africa further increased demand for U.S. surpluses; and increasing domestic consumption of grain-fed meat bolstered markets. Between 1970 and 1975, farm exports increased six-fold, freeing domestic producers of the stockpiles that had burned them ever since World War II. Following the windfall grain sales to the Soviet Union in 1972, agriculture secretary Earl Butz urged farmers to plant from fencerow to fencerow, to purchase more land and bring marginal tracts back into production, and to invest heavily in new equipment. Farmers heeded his call.

The euphoria did not last long. Farmers and ranchers began to confront the price of energy. With the 1973 Yom Kippur War, OPEC embargoed supplies of oil and prices skyrocketed. White summarized the effect:

> Increases in energy costs were particularly significant for American agriculture. Farmers and ranchers depended on cheap energy to run their farm machinery, to pump their water, and to manufacture their fertilizer. The cattle that fattened on western feed lots ate grain produced by energy-intensive farm operations. The whole food production system from plating through harvest, processing, sale, and preparation was energy-intensive. It required ten calories of energy for every calory of food it provided. In such a system rising energy prices had ramifications up and down the line, forcing increases in costs on producers and consumers (White, 1991b).

Rising energy prices spurred a second troublesome development for farmers: inflation. Moderate inflation, by weakening the dollar, allowed farmers to compete overseas. But inflation was not moderate. In the late 1970's and early 1980's, crop prices did not rise as quickly as inflation, and farmers had trouble paying their debts. As White notes, "By 1982, American farmers were devoting seven times as great a share of their gross receipts to interest payments as they had in the early 1950's" (White, 1991b).

In the early 1980's, farmers felt the one-two punch. President Carter countered the Soviet invasion of Afghanistan in January 1980 with a grain embargo. The Russian grain market was lost, as well as those of other countries who, concerned about the potential use of food as a weapon, were determined to reduce reliance on the United States. Australia, Argentina, Canada and member countries of the European Common Market increased production to supply old American customers.

Then, in the Reagan administration, the second blow hit. The Federal Reserve in the 1980's tightly curtailed the money supply in an effort to bring inflation under control. This drove dollar exchange rates up by 70 percent between 1980 and 1985. Farmers found themselves being undersold on a world market due to the more expensive dollar, and found that market

itself shrinking due to worldwide recession. Farmers lost both market share and net income. As White concludes,

> The value of U.S. agricultural exports fell from $43 billion in 1981 to $29 billion in 1986. Domestically, cattle raisers also faced a declining market. The demand for beef fell by 20 percent as consumers changed their eating habits. Many farmers found themselves paying high interest rates on land that was only worth a fraction of what they had paid for it. The irony of all this was that under a president who proclaimed the virtues of free enterprise, the cost to the government of maintaining farmers in business rose dramatically even as many farmers failed. As late as 1980 commodity price support payments had amounted to only $2.7 billion annually. By 1983 they were up to $419 billion and rising (White, 1991b).

The farm crisis of the 1980's accelerated longstanding trends on the agricultural landscape. The number of farms declined as their size increased; fewer farmers and ranchers meant fewer customers for small-town merchants; formerly rural people were pushed into cities and towns. These trends continue.

6.3 The Maritime Landscape

To an extent not evident in the official pronouncements of other Gulf Coast States, Louisiana's fisheries policy highlights the social and economic significance of its commercial fisheries sector:

> Recognizing the value of the seafood industry to the economy of the State, recognizing that the seafood industry employs hundreds of Louisiana citizens, thereby decreasing unemployment and the burden unemployment places on the State fish, and further recognizing that the commercial fishing industry is in danger of collapsing as an industry... it is the policy and purpose of this subpart to provide every method of encouragement and assistance to the commercial fisherman of this State, to protect a culture and heritage that is unique to Louisiana, to prevent unemployment of Louisiana citizens, to assure adequate food for Louisiana citizens, and to provide for economic stability in those areas of Louisiana so dependent on the seafood industry (*Louisiana Revised Statutes*, Lansford and Howorth, 1994).

Fisheries remain a prominent, and embattled, feature of the maritime landscape throughout the coastal region, but our focus here is on south Louisiana. In part this is because those battles elsewhere have been adequately documented, primarily by Paul Durrenberger in *Gulf Coast Soundings: People and Policy in the Mississippi Shrimp Industry* (1996) and *It's All Politics: South Alabama's Seafood Industry* (1992) and by Robert Lee Maril in *Texas Shrimpers: Community, Capitalism, and the Sea* (1983) and *The Bay Shrimpers of Texas: Rural Fishermen in a Global Economy* (1995). More importantly, the south Louisiana story, enacted annually in Morgan City's Shrimp and Petroleum Festival, is one of industry

interactions. South Louisiana's economy is dependant on the resources above and below the continental shelf. Historically, the commercial fishing business helped to balance south Louisiana's economy and served as a buffer against cycles in the oil industry. Federal regulation, foreign imports, and overfishing have impacted this traditional economic activity. But south Louisiana is home to a distinctive cultural community and, historically, residents have been able to fall back on each other and a broad network of kin to weather economic storms (see Box 6.1).

6.3.1 The Bayou Country of South Louisiana

Bayou Lafourche has been called "the longest Main Street in America" because of the nearly unbroken "line settlements" that have developed along its banks. This settlement pattern is a direct adaptation to transportation via the bayou, and relatively narrow levee lands along the bayou with swamp or marsh lands farther back. When driving along Highway 1 south of Thibodaux, one often sees houses across the road from Bayou Lafourche, while gardens are directly alongside the bayou. Farther south, from Larose through Cut Off, Galliano, Golden Meadow, to Leeville, boatdocks and fishhouses replace gardens, but the narrow line settlement still prevails. In Galliano, a newer settlement pattern is apparent, with houses being built well back from the bayou on built-up land. The relatively new four-lane highway which connects to the old two-lane road at the south edge of Golden Meadow drifts progressively west as it goes north, and the area between the bayou and the new highway is ripe for further housing development if the anticipated growth rate is realized.

Businesses directly or indirectly oriented toward maritime resources are predominant from Larose south to the Gulf of Mexico. There are seafood businesses of various sizes, ranging from large facilities with unloading docks, ice plants, and storage warehouses to tiny one-room sheds with a single deep freeze or other temporary cooling appliance. Many residents of Bayou Lafourche have personal docks across the road from their houses, so after unloading their catches with the usual seafood dealer they can proceed on home in their boats. The obvious seafood support industry includes net shops, carpentry and trawl door shops, boatyards and drydocks, marine hardware stores, diesel mechanics and machine shops. Less obvious but nonetheless closely connected with the seafood industry are grocery stores, gasoline stations, and other businesses providing services to shrimpers and fishermen. Also included in this category are certain restaurants and bars.

General service businesses also cater to people in the oil industry and its various support businesses, and there is a degree of overlap even with marine hardware, diesel mechanics and machine shops. Other maritime-oriented businesses are geared toward sports fishing. These include bait and tackle stores, marinas, campgrounds, and businesses offering guide services. Sports fishermen also support many of the same general service businesses as do commercial fishermen and oil patch workers, ranging from convenience stores to gasoline stations. On occasion, a degree of specialization will be seen, as in the "Shrimper's Lounge," a small bar in Golden Meadow, once bustling but now boarded up and overgrown with weeds. Physical

evidence of previous hard times in both the oil industry and in fishing, especially shrimping, is common. Restaurants and other business buildings are boarded up here and there all along lower Bayou Lafourche, and even more common are dilapidated docks with abandoned fishhouses and sheds.

The built environment along this longest of mainstreets thus records decades of struggle to extract a living from the resources of the marshes, bayous, and open waters of southern Louisiana. Two of those resources, petroleum and fish, dominate the maritime landscape.

6.3.2 Petroleum

The Texas Company (later Texaco) began leasing marshland from the Louisiana Land and Exploration Company in the late 1920's, and made the first attempt to drill in the wetlands in 1933. A floating drilling barge, patented by Louis Giliasso, provided the technological breakthrough to launch the first petroleum boom in south Louisiana. Local historian Jeanne Rome describes the impact on the community fabric of Golden Meadow, along Bayou Lafourche:

> The community realized gravel roads in 1928 and paved roads in 1936. The long-standing and renowned Dufrene's Bakery was first established in 1929.
>
> Then came oil. The first well, believed to be completed in Golden Meadow itself, was drilled on Falgout property by the Bennet Oil Company in 1938. "Black gold," to a great extent, replaced fishing in conversations and lifestyles. The shrimpers, trappers, and hunters became oil field workers, and prosperity was experienced throughout the residential and commercial parts of the community.
>
> The new industry, however, invited oil field workers from other States, such as Texas, Arkansas and Oklahoma. The locals resented their seemingly tough and care-free lifestyles and called them all "*Modie Texiens*" (Damn Texans). Working with them was one thing, but to watch them dance with their girlfriends at the local Saturday night dance was more than they could endure. The dances usually ended in free-for-all fights (Rome, 1996).

Coastal fishermen in Lafourche Parish at first ridiculed the idea of marshland drilling, but soon some of them were competing to carry supplies and personnel to the oil rigs. A 90-year-old Leeville man reminisced about the first drilling off Grand Isle in 1940. They started about 3 miles out, on pilings, and the platform collapsed. "My friend said they were crazy but I told him, 'they'll do it someday'" [LA-DW-040]. A number of Lafourche Parish businesses now producing and operating specialized offshore oil production support vessels began with single shrimp or oyster boats, carrying fresh water, food and other supplies to the rigs.

Onshore exploration and production expanded rapidly in the 1950's, and reached its peak in the early 1960's. Houma, in Terrebonne Parish, experienced a 96 percent increase in population between 1950 and 1960; other settlements went through similar strains (Davis and Place, 1983). But then, the resource under the wetlands began to play out:

> The coastal parishes, in 1970, produced 120,757 thousand m^3 of oil and 172,845 million m^3 of gas. By 1980, production had dropped drastically to only 20,774 thousand m^3 of oil and 52,283 million m^3 of natural gas -- reductions of 83 and 70 percent, respectively (Davis and Place, 1983).

Writing in 1983, Donald Davis and John Place observe: "Louisiana's coastal lowlands are now in a mature stage of oil and gas development, and significant new discoveries are becoming a rarity" (1983).

However, submersible drilling barges were improved during the 1940's, and this allowed expanded offshore production. As noted in Section 2, President Truman asserted Federal ownership of offshore lands by Executive Order in 1945, and the 1953 Outer Continental Shelf Lands Act authorized Federal leasing of offshore oil and gas tracts. In 1954, "jackup rigs," barges that could be moved from location to location and supported on adjustable legs, were introduced. Davis and Place summarize the move from the marshes to the open gulf:

> Drilling in Louisiana's wetlands served as a training ground for successful drilling on the Outer Continental Shelf. Many facilities had already been established to serve onshore oil and gas fields accessible only by boat or barge in the canalized coastal wetlands. Operations on a sea of mud are not too different from those used on a sea of water. From a rather quiet beginning, the search for hydrocarbons on the OCS grew rapidly, far exceeding early expectations. By 1981, a total of 2,433 structures had been installed off Louisiana's coast...(1983).

The gulf was crowded with oil and gas platforms, so much so that they became visual "landmarks" for shrimp fishermen working the area. Benefits and liabilities are evident in the complex interactions between fisheries and the offshore oil industry (Norville, 1975).

Assessing the impacts of the offshore petroleum industry is essential to understanding twentieth century economics and cultural dynamics in Louisiana (Davis and Place, 1983; Brabant and Gramling, 1984; Laska et al. 1993). There have been various ups and downs in the industry during the past three decades (Seydlitz and Laska, 1994). Broadly, four phases of OCS activity can be described: first, sustained growth up to the 1970's; second, a boom in the 1970's and early 1980's; third, a bust in the mid-1980's and into the early 1990's; and fourth, a nascent boom in in the mid-1990's which was not being sustained by 1998. (Chapters 4 and 5 uses four phases; Chapter 7 expands the phases to five.) A key characteristic of boom and bust cycles is that economic effects are not equally distributed (Tolbert, 1995). Petroleum industry boom cycles cause labor shortages in other sectors of the

economy; for instance, Louisiana's hot pepper industry was adversely affected during the 1980's boom by a shortage of harvesting labor (Schweid, 1989).

A manager with a Larose tugboat company described local prosperity in the 1970's as follows:

> ...things were really, really good. We had the oil boom, traffic jams, people from all over coming in here. Recessions in other parts of the country never affected us here. That Lincoln Continental Mark I, I think it was. A limited edition. Four or five were sold here in Lafourche and Terrebonne. People from Detroit wanted to visit to find out why so many were sold here [LA-DW-026].

In the mid-1980's the petroleum industry went into a depression (McKenzie et al. 1993), and the shock waves reverberated into associated industries. Different people give different dates, and the effects were delayed in the various businesses related to oil production. Some businesses were affected earlier, as if in anticipation of the general bust. Nonetheless, there is a consensus that the effect was sudden. People describe the downturn with phrases like "pulled the plug" or "flushed the toilet" [LA-DW-024, LA-DW-026]. The oil companies are blamed for the duration of the recession, because they went overseas.

The Gulf of Mexico came to be called "the Dead Sea" by petroleum industry insiders. Many of Louisiana's bluecollar workers were forced to leave the State in search of jobs elsewhere (Brasseaux, 1989). The bust cycle caused an exodus of skilled as well as unskilled laborers, and a host of other social problems (Seydlitz et al. 1993).

In Terrebonne Parish, unemployment had been 2.5 to 3 percent but then it soared to 24 percent and the Terrebonne school system nearly collapsed (see Section 7) [LA-DW-007]. People in Houma reportedly joked, "Last one out, please turn the lights off" [LA-DW-041]. Out-migration was seen as a good thing, however, by those who were determined to stay. As one man [LA-DW-007] commented, Terrebonne lost "the layer of people from out of State" during the bust, and that helped the recovery. Similarly, the manager of a family tugboat business in Lafourche Parish [LA-DW-026] commented that it was oil patch management that "came in and went out. We called them 'the overnighters.'"

The bust seems to have caught relatively small investors in particularly difficult circumstances. One woman [LA-DW-010] described how she and her husband had purchased five tugboats and barges, which they lost as a result of the bust. The strain of the financial crisis contributed to a divorce. In 1997, her ex-husband was back at work in the oil industry doing brokerage, but she would not consider giving up the security of her institutional job. Stories about bankruptcies and divorces are common [LA-DW-026].

In 1995 and 1996, observers were expressing hopes that petroleum might rebound (Seydlitz, et al., 1995b; Gramling, 1995, 1996; Associated Press, 1996). A year later, what appeared to

be a full-blown boom was underway (Cranswick and Regg, 1997). People along Bayou Lafourche saw a turnaround as early as 1990 [LA-DW-030], but by 1997 it was marked. As one man, a manager with an inshore tugboat company put it, "the Gulf is on fire" [LA-DW-028]. The boom clearly seemed to be technologically-driven; new three-dimensional imaging techniques involving computer graphics and seismographic testing were showing precise locations of oil pockets, as well as their size, and new multi-directional drilling techniques were allowing multiple wells to be drilled from a single platform. One man said that with the older seismic testing methods, "they'd shoot and identify ten wells, and you'd make two or three, but with three-dimensional seismic testing "they identify ten, and you get eight or ten" [LA-DW-028]. At the same time, offshore exploration was being expanded into ever-deeper waters, farther and farther offshore.

Infrastructure was seen as a major problem; Port Fourchon, on the coast in Lafourche Parish, was growing rapidly ("blowing and going") but was limited by two-lane highway facilities [LA-DW-002]. One person [LA-DW-028] claimed that there are 54,000 trucks a month -- nearly 2,000 per day -- traveling down Highway 1 (another [LA-DW-050] said there were more than 50,000 trucks one month, but the average was 30,000 to 32,000 per month). Skilled labor was the other problem (see Section 7). People who left in the late 1980's had not returned, and younger workers had not been trained (von Flatern, 1997). Skilled laborers who might be brought in from other parts of the country cannot be lured to the area, largely because of a housing shortage [LA-DW-055].

Local observers noted a "price war" because of the labor shortage. A personnel manager for a major shipyard with local facilities admitted that they were paying "obscene" wages to machinists, and still turning away projects simply because they could not find enough welders, tackers, sandblasters, painters, and carpenters to get the jobs done. Boat company personnel mentioned that oil companies were paying high prices for boat use because of a shortage of vessels. One man explained that during the bust, "We lost sort of an apprenticeship program. The young kids we used to train, we stopped giving them jobs" [LA-DW-026]. Then when things picked up, they had to hire from outside. "We lost a lot of our teachers, the older people who had the knowledge to train people." Problems now include having to hire people without experience, people "who don't know the vocabulary of the job" [LA-DW-026].

Many people commented on the high demand for labor in the oil and gas sector, and how this was siphoning labor away from other businesses. A seafood business owner, having trouble finding dock workers commented that "If you can stand erect, you can get a job" in the oil patch [LA-DW-042]. A crab dealer who had seen labor in his sector of the fishery go to oil said, "you can find work unless you're unable physically or mentally" [LA-DW-043]. A shipyard personnel manager noted: "Any able-bodied male who isn't working today is a lazy son-of-a-bitch" — and then he hastened to add that they are hiring women, too, as "welders and crane operators, and they're good" [LA-DW-055]. The manager of a cane processing plant in Lafourche Parish reported labor shortages due to higher prices paid to oil patch

workers [LA-DW-054]. Laborers were being brought in from Mexico by several shipyards. One in Houma built a dormitory for its Mexican workers, because of a housing shortage [LA-DW-030], and a shipyard in Larose was negotiating with the Immigration and Naturalization Service to bring in foreign workers because of what they perceived to be a domestic shortage [LA-DW-055].

Unskilled or minimally experienced workers were numerous in Galliano in the fall of 1997, seeking work on crew boats. A Cajun man, a former production foreman, stated that most rig workers, probably 60 percent, come from out of State. Many are from Alabama and Mississippi, and most were raised on farms. He also commented that "It's steady income on these work boats. That's what they're looking for" [LA-DW-025]. Motives among men we talked to, however, varied.

Several African-American men were reticent to talk to the researchers, but those who did usually emphasized the opportunities they saw. Even so, some African-American crew boat workers had frequently moved from job to job for various reasons often involving girlfriends and family members [LA-DW-019]. Young white men were more likely to emphasize what they were avoiding, like the one who commented that he had "burned out" on college and was working crewboats primarily because he "kept in trouble" back home [LA-DW-020]. A young man from Alabama [LA-DW-036] described how he made crewboating worthwhile by taking bottles of whiskey out and selling them; his friend said he spent two semesters in college but he "can't work on land. I like to drink too much" [LA-DW-037]. One young African-American man from Alabama confessed that he, too, was working on crew boats because he had lost his good job in Georgia by "partying too much" [LA-DW-038].

Memories of the 1980's bust were stronger than memories of the 1970's boom, and this factored into labor recruitment. A Dallas oil executive commented that young professionals are avoiding the oil industry because "they're gun-shy" [LA-DW-001]. Local residents, too, were leery of the new boom, afraid it would not last; such fears were expressed by people already working in the industry [LA-DW-012], as well as those who were not [LA-DW-007]. People with professional and technical skills who had found work with institutions in the area, such as LUMCON, a marine research consortium, were pleased with the security and unwilling to consider returning to the oil industry [LA-DW-009, LA-DW-010].

6.3.3 Fish

Bayou Lafourche is home to two of Louisiana's major shrimp ports, Golden Meadow and Leeville. These are rivaled in size only by Dulac-Chauvin in Terrebonne Parish, Delcambre in Iberia Parish, Empire-Venice in Plaquemines Parish, and Cameron in Cameron Parish. The Louisiana shrimp fishery uses a diverse technology. In the nineteenth and early twentieth century, shrimping was conducted with beach seines (Durrenberger, 1992), but these were almost entirely replaced by trawl nets during the 1920's. Besides otter trawl nets (first introduced to Florida by Portuguese fishermen), Louisiana shrimpers use plumb staff beam

trawls, butterfly nets or "paupiers" (Capone, 1986; Faulkner, 1996), and the recently invented and closely related "skimmers" (Fritchey, 1996). Boats rigged with butterfly nets are sometimes called "night riggers." The offshore fishery relies entirely on trawl nets, but the inshore fishery (Roberts and Sass, 1980) uses all options.

Although Louisiana continues to be a Gulf Coast production leader, the State's shrimp industry today is in deep trouble. A knowledgeable manager at a large shrimp company on Bayou Lafourche [LA-DW-034] estimated that Bayou Lafourche had gone from 120 to 150 big shrimp boats in the previous decade to about 20. In 1986 there were 39 seafood dealers with unloading docks, but by 1997 there were only nine left and three or four of those were "on the way out." Shrimp boats were sold for use in distant locations such as Africa and Venezuela [LA-DW-032]. One seafood company manager who has been in his position since 1970 said, "I've never seen the Gulf fishery as decimated as it's been in the last few years" [LA-DW-039].

There is a complex history behind this malaise, a tale of global forces and local responses. But there are many intervening actors. Thomas Murray, a marine economics consultant, begins the story with passage of the Fishery Conservation and Management Act of 1976, which promoted capital investment and fishing pressure in the U.S. Exclusive Economic Zone (EEZ) in the gulf:

> It was designed initially to remove Russian, Polish, and Japanese trawlers from the U.S. coast. The result was that hundreds of U.S. shrimp vessels were in turn forced to return from foreign waters like Mexico and Brazil to the Gulf of Mexico... Some of the Texas and Louisiana vessels that had been fishing three or four months of the year off the Yucatan and off Tampico were forced to find a way to harvest exclusively in U.S. waters. These vessels were of larger size classes than some of the vessels in U.S. waters. At the same time, the existing number of fishermen in U.S. waters increased (Murray, 1994).

The Federal government encouraged this expansion in the EEZ by offering guaranteed financing for new vessel construction through the Department of Commerce's Title XI Loan Program. From the late 1970's through 1988, 110 shrimp trawlers valued at $32 million were financed through this program in Louisiana. An additional Federal program, the Farm Credit System, offered 15-year loans for vessel construction. And an investment tax credit lured other operators, many without a record of historic participation in the fishery. Murray recounts the implications:

> You could get a $200,000 boat and get a $20,000 investment tax credit at the same time. Rapid capital depreciation rules prevailed in the late 1970's too. The net result: somebody who wasn't really committed to the shrimp industry could get in for about a 12.5% investment (2.5% cash investment plus a 10% investment cash credit) with an 87.5% government-guaranteed loan (1994).

But shrimpers soon faced a cost/price squeeze. Shrimp prices fluctuated in the late 1970's and early 1980's, dropping from $4.26 a pound (for 31/35 count raw shrimp) in 1979 to $2.51/pound in 1981. But fuel prices escalated from $.39 a gallon in 1979 to $1.11 in 1981 (Murray, 1994), a jump which propelled those in the oil business but trimmed profits for trawlers.

Farm-raised shrimp from abroad added to the problems of the shrimper, though not to the wholesalers and retailers who sourced around Latin America and Asia for a constant supply of product. In 1976, 270 million pounds of imported shrimp were augmented with 245 million pounds of U.S.-landed shrimp; by the early 1990's, imports amounted to 632 million pounds; U.S. landings dropped to under 200 million pounds. Then, in the late 1990's, the Asian markets which had been absorbing some of the world production of farm-raised shrimp collapsed, and these additional shrimp found their way into the U.S. market, further depressing prices received by domestic shrimpers (Murray, 1994; Childers, 1997).

Gulf shrimpers are also at the mercy of the environment and the environmentalists. In a story that has been well-documented elsewhere (cf. Durrenberger, 1988, 1990; Margavio and Forsyth, 1996; White, 1989), the latter have succeeded in getting turtle excluder and by-catch reduction devices onto the national agenda and into the trawl nets. But it is the unpredictable environment of the gulf which confounds shrimpers seasonally and yearly. Catches fluctuate widely due to the conditions in the estuarine nurseries and the bays. Robert Fritchey captures some of this uncertainty facing Louisiana's bayou and bay shrimpers:

> Last spring, unseasonably cold weather set agricultural crops back around the county. While Pontchatoula strawberry farmers tried to protect their blooms from freezing, Wildlife and Fisheries biologists sampled inland waters. Their initial reports were dismal: "The current crop of brown shrimp appears to be one one-hundredth of that normally found at this time of the year." Their reports remained bleak through most of April, which discouraged some fishermen nearly to the point of not investing the effort to get ready. But the veterans just winked: "Wait awhile."
>
> Sure enough, the winds died down and the weather turned hot. A prolonged lack of rain -- which confounded terrestrial farmers -- allowed salinities to rise, which small brown shrimp love. Soon they were popping up everywhere and growing in double time as the sun heated the shallow waters.
>
> Though the season had to be postponed until nearly June, to allow the shrimp to reach a marketable size, when it did finally open it opened with a bang -- just before the full moon -- with so many brown shrimp being landed that the price dropped twice in the first week (1996).

Shrimping is the most lucrative and volatile fishery, but other shellfish and finfish are exploited in the waters of south Louisiana. Crabs are caught in both salt and brackish waters,

and are a substantial fishery. Parameters of the crab fishery are not well defined because it encompasses commercial, recreational and subsistence uses (Adkins, 1972). Formerly taken with baited longlines, wooden boxes, trawls, and seines, crabs are now most often captured with wire traps. Skiffs are used to set small traps, about 30 inches square and 18 inches high, arranged in lines and marked with floats. Crabbers often run 300 traps, and some family operations set more than 500; it has been estimated that over a hundred thousand traps are being used in Louisiana (Faulkner, 1995).

Menhaden ("pogy") is another important Louisiana fishery; these fish are used for fishmeal and fish oil. In the 1970's there were processing plants at Bayou Grand Caillou, Morgan City-Amelia, and Empire. Two of Louisiana's plants closed in 1992 due to reduced catches, but menhaden rebounded in 1993 (Krapf, 1993, 1994). A catfood plant in Golden Meadow used croakers; this facility is closed now but is being considered for renovation. Oystering is of major importance in the State, but is currently relatively inconspicuous in Lafourche compared to Plaquemines and St. Bernard parishes.

In general, fishing is more specialized now than it was in decades past. One seafood company manager commented that fishing used to be year round, with shrimp, crab, oysters and fish: "You always had something" [LA-DW-039]. Now, between the decline in commercial finfishing, the decline of oystering and the specialization of crab dealers, he shuts the doors and does not open again until May.

Sports fishing, however, is a growing business. While some commercial fishermen continue in their attempts to compete against sports fishermen, others have given up and gone to the "other side" as fishing guides. A Cajun man in his fifties [LA-DW-029] was one of the first sports fishing guides in the area. He had shrimped for 23 years (shrimpers commonly trace their career to the first time they went out with their father or uncle at age 10 or 12) before becoming a guide in 1975. The year he quit was one of the best shrimping years he had seen, but prices were so low that "you couldn't give them away." For the first 8 years he had no competitors; now there are about 25 licensed guides. Some guides came from previous careers in fishing, but only a few had worked in the oil industry before. There are several men who work oil rigs 7 days on, 7 off, and spend a few days guiding, but in the long-term guide's opinion "That's not a guide." Investment costs prevent a lot of people from starting guide businesses now; what was a $5,500 investment in the 1970's escalated to $20,000 in the late 1990's. Despite bringing in $450 per day, the guide commented that his costs have increased correspondingly so that he still makes relatively little money. He enjoys the work for non-monetary reasons: "I have clients from all over the world. Italians last year, and a guy from Switzerland who could speak French with me."

6.3.3.1 Fishery Interactions with the Oil Industry

The film *Thunder Bay* portrayed Cajun shrimpers as rather simple-minded men who opposed offshore oil drilling for essentially superstitious reasons, whereas the oil men were depicted

as logical, rational people who coincidentally discovered how shrimpers could catch more shrimp. The reality of the situation was more complex than the Hollywood version. Some shrimpers and oystermen took advantage of new economic opportunities arising out of the oil industry, but nearly all who continued fishing suffered some adverse effects. Cycles in the oil industry have particularly affected the fisheries -- sometimes favorably and sometimes not. When oil does well, it provides a fallback option for fishermen, but when it does poorly it places a strain on the fisheries.

There are many indications of opportunistic switching between fisheries and oil support vessels, especially among crewmen but also among small boat owners. A relatively stable "structural" aspect of this is seasonal in basis. One Cajun man [LA-DW-025] commented that a lot of people who had been trawling for shrimp early in the year were going to the work boats, because "May season, they made a little money. August season, it's been kinda poor." A seafood company manager [LA-DW-034] commented that aside from the May and August seasons, shrimpers have 9 months during which they must make a living: "If it wasn't for the oil industry there's no way they could survive." Another seafood company manager [LA-DW-035] said a number of her inshore shrimpers take jobs on tugboats during the winter.

More important are indications of a long-term trend in which the sons of fishermen are no longer following their fathers' careers. Many young men are becoming roustabouts instead of working on shrimp boats, and there are strong indications that the processing sector is also being abandoned as a career choice. One seafood company manager [LA-DW-034] commented with a sense of resignation that his son has been working with him since age 12, but after he graduated from college in 1986 he realized he could not make it in seafood. (It should be noted that not following a parent's career path is a trend found throughout the United States and in many types of occupations.)

Complicating the picture are movements from oil to shrimping and other fisheries, and between sectors of the shrimp fishery. A former marine extension agent [LA-DW-041] said that when the oil bust hit in the mid-1980's, it had a "tremendous impact on fisheries," causing "bloating" and "overcapitalization." A seafood company manager [LA-DW-039] said that as early as 1981, with the onset of the bust, people who had been working on tugboats and work boats went to inshore shrimping. Shrimpers who had big boats also have gone to small boats. The combined influx of former oil workers and shrimpers from the offshore sector contributed to problems in the gulf, because most of the shrimp were harvested inshore before they grew larger and migrated into the gulf. Beginning around 1993, when new opportunities were appearing in offshore oil development, shrimpboat captains began getting their papers and working on tugs as captains. Shrimpboat deckhands went to work in shipyards, or became deckhands on crewboats and utility boats for oil companies. The seafood company manager concluded that "I hope it'll have a positive effect on the gulf fishery -- take some people out of the inshore fishery and relieve pressure on the stock."

Movements from oil to shrimping are limited because, as the previously-cited seafood company manager [LA-DW-039] commented, shrimping is "prospecting." A shrimper must know how to find shrimp, which requires "the experience from having come up in the occupation." Shrimpers can become oil boat captains, but oil boat captains can't become competent shrimpers. Shrimpers are seldom enthusiastic about switching to oil:

> Our number one shrimper just got his license and converted to the oil field; he said "Well, it's okay, but it's nothing like coming up the bayou with a good load of shrimp." You can't make a good trip on an oil boat; all you can do is avoid a bad trip. Shrimpers are like the cowboys of the old west. They make their own way [LA-DW-039].

Crabbing is a relatively inexpensive fishery to enter, and many people formerly employed in the petroleum industry turned to running crab traps during the mid-1980's downturn; retirees are also inclined to become crabbers (Biro, 1991). A former marine extension agent explained that oil and gas workers owned boats already, so "they just bought crab traps and went right into business" [LA-DW-041]. Indeed, commercial blue crab trap licenses rose dramatically in the mid-1980's (see Figure 6-1). One Cajun man [LA-DW-025] said only a few people went from oil to fishing in the 1980's but a lot of people went crabbing: "Little aluminum hulls and whatever, people just trying to make a living." A crab dealer [LA-DW-043], however, suggested that few of the oil and gas workers stayed with crabbing. The work is too hard, he said, adding that if it were not for Asians, Louisiana would not have a crab fishery. Crab production has declined in recent years, and the crab dealer believes this may be a result of bottom disturbance related to the recent revival of the oil industry.

Summarizing the interactions between the oil and gas industry and fisheries, a former marine extension agent [LA-DW-041] focused on the negative factors. He suggested that oil and gas is competing for both human resources and physical resources. It brings in people who have no appreciation for renewable resources, and fisheries are being squeezed out through regulations because the regulators do not grasp the importance of fisheries as an option during bust periods. Finally, prices are driven up by oil and gas development, while seafood prices are relatively flat so that fisheries are hurt. Despite much truth in this view, what is missing is that the oil and gas industry has also provided employment options for fishermen. Both industries serve as "safety nets," each for the other. But with the present and likely future state of fisheries, the option of switching to fishing may not be viable for oil patch workers when the next bust comes.

6.3.4 The Quality of Life in South Louisiana

Most residents of Lafourche Parish seem generally positive about the area, despite being candid about problems faced. Neighborliness is highly valued; one man commented that Lafourche Parish has the "Friendliest people in the world," but even he complained about the number of "foreigners" moving into the area in the past decade [LA-DW-003]. Several

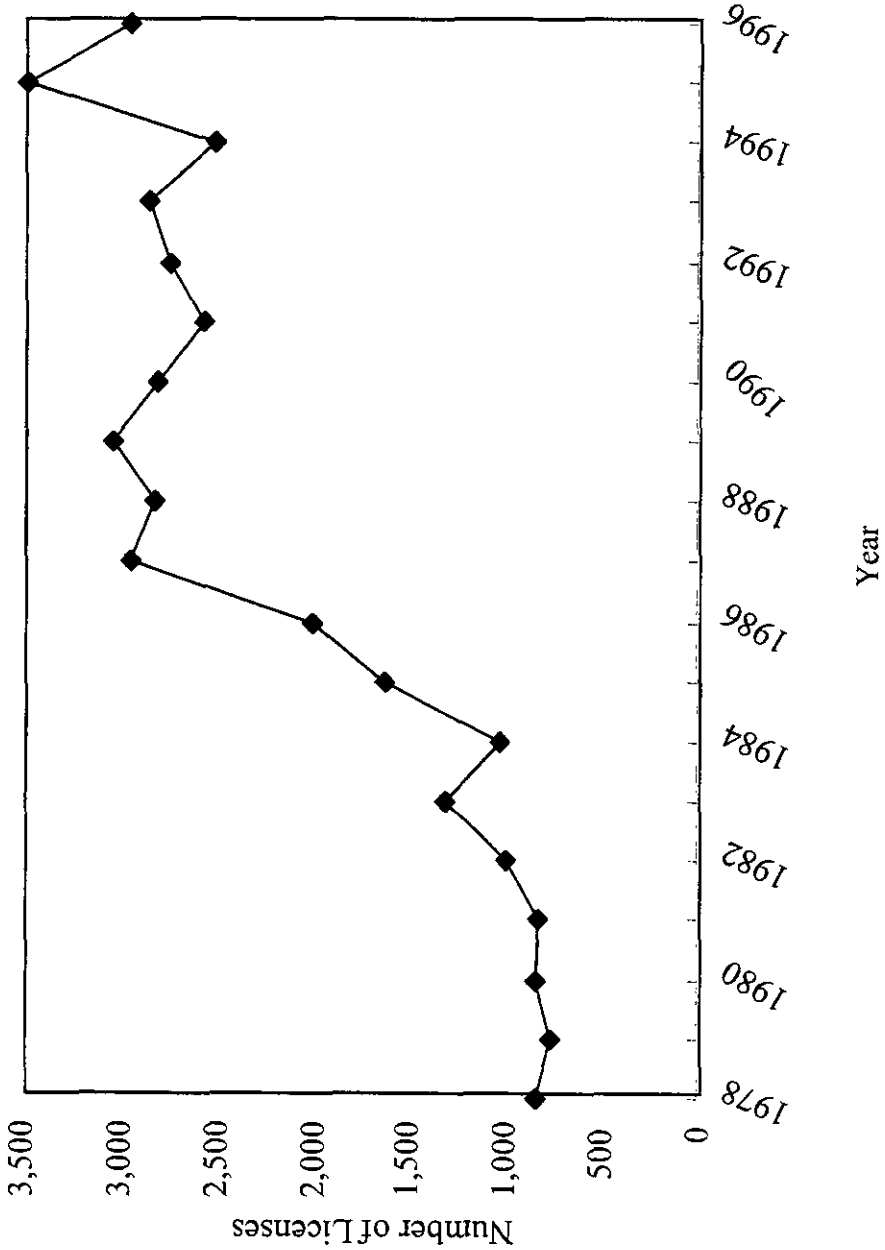

Figure 6-1. Number of commercial blue crab trap licenses in Louisiana.

Source: Adapted from Roberts and Guillory, 1997.

others echoed this concern. An offshore platform supervisor commented that the multicultural environment of the oil rigs had caused him to rethink his own life experience; as a Sicilian-American born in Texas, he told how, after his mother's death, his father married a Mexican woman. She forced him to learn Spanish: "I hated it! But now I'm glad I learned it, because I need it working here" [LA-DW-022].

Although some people see adverse "impacts" from the oil industry, either on fisheries or other aspects of the environment, or on the economy in terms of the boom and bust cycle, there is a much more fundamental conviction that the oil industry is an essential part of the area's opportunities. One Cajun shipyard manager put the connection in personal, family terms; there is a "unity" of seafood and oil-related business in the area, he said, that is expressed in his own family history. His mother's family was exclusively involved in seafood, but his father's family participated in both. His paternal grandparents moved to Grand Isle in 1948 and started a seafood business, which led to a marina. His parents went into the restaurant business, camper rentals, and other businesses in Leeville (a major operations area for offshore oil before Port Fourchon), dealing with "the people who served the oil field" [LA-DW-030].

People without extended family in the area have very different experiences with the oil industry. Women accompanying their husbands to offshore oil jobs may find themselves particularly at loose ends. This certainly was the case with a young woman in her twenties, who had come with her husband and baby, from Oklahoma. Staying in a motel while her husband was working on a barge for a company in Dallas, she told a café waitress she felt like she was "going nuts." She asked, plaintively, "Is there *anything* to do around here? I just feel like I'm at the end of the earth. I don't like it down here. Even the *air* smells funny." If following a husband to his work site is difficult, so is staying home while he travels. A woman in her thirties working at the Merchant Marine Training Center in Larose reported that her husband moves rigs; he went to Alaska for 2 years. "It was pretty ...[bad] but you do what you have to, to survive" [LA-DW-052].

A major concern in coastal Louisiana, both in Lafourche and neighboring Terrebonne Parish, is the boom and bust cycle of oil. A parish planner in Houma noted that Terrebonne Parish has made a concerted effort to diversify its economy, and in fact the medical field is now its second largest industry. Even so, with the latest upturn in petroleum, he commented that "attempted diversification is now pretty much forgotten because the oil industry has taken off so much" [LA-DW-004]. A tugboat company manager said everybody is building again, and fretted that "if it ever slows down it'll be the worst bust yet" [LA-DW-028].

People expressing what they explicitly identified as a Cajun point of view seemed somewhat less concerned about economic ups and downs, and this was in fact most marked among Houma Indian people. As one Houma man commented, "See, you never worry about food on the bayou. You can always go toss a line out and get some food." This was a multifaceted theme during church services and a subsequent community dinner at the United Methodist

Church in Dulac. During the service, the minister (a Houma man) gathered the children together and talked with them about a scripture lesson differentiating between wants and needs. The minister gave the example of food: all we need is white beans and rice, but a lot of people want fancy food, "like a Big Mac." The community dinner was a literal feast, with roasted turkeys, jambalaya, fried redfish, fried flounder, rice and white beans, egg salad, carrot salad, cake, and sweet potato pie. But when the minister blessed the meal, he stressed community self-sufficiency by talking about how the redfish was just caught yesterday and how the shrimp fed to church volunteers the day before were "still kicking" when they brought them in. The blessing echoed his words during the morning sermon. Then he had reminded those with high aspirations that people who leave the community to get material goods are leaving their spiritual support.

Box 6.1 The Peopling of the Bayou Country

The Chitimacha people were living between Bayou Lafourche, Bayou Teche, and the Gulf of Mexico, when the French arrived in Louisiana (Spitzer, 1979). Allied tribes, the Chawasha and Washa (now believed extinct), had villages directly on Bayou Lafourche in 1699. The central village of the Washa was near present-day Labadieville upstream from the village of the Chawasha. In later years, a few Choctaw people also lived on Bayou Lafourche (Kniffen, Gregory and Stokes, 1987). The American Indian people most closely associated with Lafourche Parish during the nineteenth and twentieth centuries are the Houma, who moved south and west from an earlier location in southwestern Mississippi. The Houma moved west of the Mississippi in 1765, and down Bayou Lafourche to Bayou Terrebonne. Oral history records that the Spanish gave the Houma all the land between the Atchafalaya River and Barataria, but documentation has not been found and the Americans refused to recognize the Houma claim to the land (Curry, 1979; Spitzer., 1979).

The Acadians, who later became known as Cajuns, were dispersed from their homeland in Nova Scotia between 1755 and 1765. Some Acadians were imprisoned in Britain, some were repatriated to France, and others were sent to Saint Domingue. Some of the latter went on to Louisiana by sea, while others traveled overland or down the Mississippi to Louisiana. Between 3,000 and 4,000 thousand Acadians arrived in Louisiana by the end of the 18th century (Spitzer, 1979). The Acadians were first settled along Bayou Manchac and on the Mississippi south of Baton Rouge, and then along Bayou Lafourche from Donaldsonville south to Thibodaux.

Upper Lafourche Parish also was one of the areas settled in 1778 by Isleños, Spanish-speaking people from the Canary Islands. The Cajuns assimilated Spanish settlers in Lafourche and Terrebonne parishes, as well as Germans of the Côte des Allemands on the Mississippi River. Some of them were later displaced from this area, into the swamps, by plantation development. Lafourche Parish is officially recognized as one of Louisiana's 22 "Acadiana" parishes. Although the original Acadian settlement area did not extend east of

the Atchafalaya River, it is now clearly recognized that towns such as Lockport, Larose, Cutoff, Galliano, Golden Meadow, Raceland, Thibodaux and Houma are indeed predominantly Cajun (Savells, 1993).

Although trade was supposed to be conducted only through France, Louisiana conducted illegal trade directly with Spanish colonies in Mexico and Florida, and overland with the British. Smuggling became a major business at Barataria Bay, Bayou Lafourche and Bayou Teche during the colonial era, supplementing small-scale farming. Sugar cane developed as a major crop only after 1795, when a new method of crystallizing sugar was discovered. Cajun farmers were largely displaced by Americans during the early nineteenth century, and they turned to trapping, hunting and fishing, along with subsistence gardening. The major development of stereotypical "Cajun culture" (lumberjacking, trapping and fishing) came after the Civil War, and should be recognized as an adaptation to post-war economic woes (Brasseaux, 1989). Trapping became a large-scale commercial venture only in the early twentieth century, but muskrat production declined after the 1930's because of imported nutria (a large South American rodent). Coastal fishing has been a commercial venture since the nineteenth century, although there have been many technological changes. Seine nets were displaced by trawl nets (a transition clearly remembered by a 90-year-old Cajun man in Leeville, [LA-DW-040]), and there have been many changes in types of boats used for commercial fishing.

Between 1930 and 1990 Louisiana's population doubled, from 2,101,593 to 4,219, 973. Lafourche Parish, however, nearly tripled its population. From 32,419 people in 1930, the parish has grown to 85,860 in 1990. Higher than average growth rates were experienced by several other parishes as well. Expansion of the petroleum industry accounts for most of the growth of Calcasieu, Lafayette, Iberia, and Terrebonne parishes. Petrochemical industry development is involved with growth in Ascension and St. John the Baptist parishes, and a combination of factors including petroleum industry and proximity to New Orleans explain growth in St. Charles and Plaquemines, as well as Lafourche Parish (White, 1998).

The 1990 American Indian population of Lafourche Parish was 1,864 (White, 1998). Most of these are Houma people, many of whom live in Golden Meadow. In 1990, a total of 50,132 people (58.4 percent of the total population) reported their ancestry as either "French" or "French-Canadian;" 15 percent said "French" and 43.4 percent said "French-Canadian" (White, 1998). "Cajun" identity in southern Louisiana is a complex and shifting phenomenon, but these figures indicate that either a large minority or a small majority of people in Lafourche consider themselves to be Cajun, especially in the southern part of the parish. Lafourche Parish has a fairly substantial African-American population, but most of these people live in the north part of the parish where there is a substantial sugar cane industry. In the south part of the parish, there are only two small Black settlements in Larose, one on either side of the Bayou.

Other minority ethnic populations identified in Lafourche Parish by the 1990 census include Portuguese; Mexican, Cuban, Puerto Rican, Hondurans (apparently including African-American Garifuna people), Panamanian, Colombian, Ecuadorian, Peruvian and other Hispanics; Chinese, Filipino, Japanese, Vietnamese, and Hawaiians (White, 1998). Most of these are quite small; groups represented by more than 300 individuals included "other Hispanics" (752), Vietnamese (397), and Mexican (367). The Vietnamese, who are prominent in the seafood industry, live scattered throughout the south part of the parish rather than being concentrated in an enclave.

Most people in Lafourche Parish (nearly 70 percent) are English speakers; French is spoken by a large minority. Acadian French varies regionally; along Bayou Lafourche, the dialect is sufficiently distinct that some call it "Lafourchaise." According to the 1990 census, French is spoken by 20,123 people in Lafourche Parish; this represents 23.4 percent of the population (White, 1998). Other languages spoken at home in Lafourche Parish include Spanish, German, Scandinavian, Italian, Greek, Polish, South Slavic, Indic, Tagalog, Chinese, Japanese, and Vietnamese (White, 1998).

------end of Box 6.1

6.4 The Industrial Landscape

"Selling the South" has been a popular activity among southern civic leaders since the end of the Civil War when cities cast about for northern and foreign investors to help rebuild their stricken economies. Though these investments returned some dividends, mainly to locals in an economic and political position to benefit from them, outside investment often did not raise economic standards or educational levels appreciably. And a good deal of the profits drained out of the region.

Part of the reason for the relatively low rate of return on outside investment related to what civic leaders "sold" to entrepreneurs. They touted cheap labor, low taxes, minimum regulations, among other incentives. By the 1930's, the Boards of Trade and their successors, the Chambers of Commerce, had efficiently organized recruitment committees and pitches to potential investors. During this decade, industrial recruitment became an organized State activity for the first time, though the "selling" points remained pretty much the same.

Governor Hugh Lawson White of Mississippi frequently receives the honor -- some would say dubious -- of inaugurating the south's modern era of industrialization. Hoping to attract manufacturing to his Depression-ravaged State, Governor White instituted his plan to "Balance Agriculture with Industry" (BAWI) in 1936: a program of State and local subsidization of industry. The historian of the "selling of the South," James C. Cobb, places White's scheme in its proximate context:

> The granting of subsidies was already a common practice by the Depression years. In fact, such contributions to industrial expansion dated well back into the nineteenth century when, for example, subsidies to railroads indicated a willingness to commit public resources to the support of private commercial and industrial ventures. Prior to BAWI, however, most such grants and concessions had to be issued by individual communities acting without, or sometimes in defiance of, legal constraints. By introducing a system wherein the State sanctioned and supervised the use of municipal bonds to finance plant construction, the BAWI program lifted the curtain on an era of more competitive subsidization and broader State and local government involvement in industrial development efforts (Cobb, 1982).

Much of the early industrial activity under BAWI in Mississippi, and elsewhere in the South as States followed Mississippi's lead, had similar characteristics. These were low-wage, labor-intensive manufacturing concerns, attracted by a labor pool of unskilled, predominantly female, workers. Typically, too, companies promising to locate in the South could extract promises from local officials to "preserve the nonunion climate that helped keep wages low" (Cobb, 1982). Grenada, Mississippi, for example, agreed in its contract with the Real Silk Hosiery Company "that it will so far as possible prevent any interference from outside sources that may cause or result in labor disputes or trouble and the payroll guarantee hereunder by... [Real Silk Hosiery Company] shall be canceled during the period of any labor disturbance caused by outside interference" (Cobb, 1982).

Ingalls Shipyard in Pascagoula, more so than Real Silk Hosiery in Grenada, provides the model for our story of the evolving industrial landscape of the Gulf Coast. A $100,000 bond issue for channel deepening and a railroad spur in 1938 convinced the executives of the Ingalls Iron Works Company of Birmingham, Alabama, to locate their proposed shipyard in Pascagoula rather than Pensacola, Florida. Initially building cargo ships for the Merchant Marine, Ingalls expanded operations at the onset of World War II, employing 12,000 workers, most "from cotton farming and pine land sections of Mississippi and many from Arkansas and Alabama" (Couch, 1964).

Apparently without the inducements offered by Pascagoula, the Aluminum Company of America announced that it would establish a $4 million plant in Mobile in 1937. A promotional booklet published by the First National Bank of Mobile in 1940 recounts the excitement:

> News that the giant industry had selected Mobile for location of a new plant set industrial circles buzzing. Nationwide attention was focused on the Port of Mobile's modern facilities and the Mobile area's unlimited supply of low-cost electric power -- both powerful factors influencing the location of the new Aluminum Company plant. Indeed, the announcement seemed to be the keynote for a chorus of approval of Mobile as an ideal industrial site, which was soon followed by the coming of several other industrial plants to this district (First National Bank of Mobile, 1940).

With the approaching war, the industrialization of south Alabama paralleled that of Pascagoula, but with a vengeance. Mobile's two shipyards, Alabama Dry Dock and Shipbuilding Company (ADDSCO) and Gulf Shipbuilding, employed 40,000 workers by 1943. Population in the City of Mobile grew from 79,000 in 1940 to 125,000 in 1943, while an estimated 89,000 people moved into Mobile County during that interval. Historian Wayne Flynt offers this editorial vignette of the area:

> Physically, the county had no way to house the newcomers, so tents, trailers, and "homettes" (cheap, prefabricated boxlike structures) sprouted across the county. In the city boarding-houses rented the same room to three men on different shifts so that one slept in the bed while the other two worked. The city's genial aristocratic heritage of tolerance and festivity gave way to intolerance, religious bigotry, racial conflict, and exhausting labor (1994).

But, in contrast to much of the south's industrialization efforts spawned by BAWI and its counterparts in other States, the "exhausting labor" in Mobile's shipyards was largely unionized. And the racial conflict that Flynt alludes to -- a riot in 1943 at Alabama Dry Dock following a begrudging effort by the company to upgrade black workers into welding jobs -- was a contest over relatively well-paid, relatively skilled jobs (cf. Nelson, 1993). Thus the story of south Alabama's industrialization during the war, is not a typical one of the "selling of the South."

Following the war, however, Alabama did establish its own industry-chasing vehicle, the Alabama Planning and Industrial Development Board, authorized to provide factories, property tax exemptions, and other inducements (Bartley 1995). Somewhat tardily, in 1962, the City of Mobile established its own Industrial Development Board (IDB), empowered to grant the range of inducements to industries locating within a 25-mile radius of the city. Until some more restrictive legislation was passed in 1992, property-tax abatements could be granted for 40 years (Mabry, 1999).

The Texas Gulf Coast had little need to follow the Mississippi and Alabama roads to locally subsidized industrialization. Since the discoveries at Spindletop in 1901 near Beaumont, and the opening of fields in west Texas in the 1920's, it had oil and gas. Thus, during and after World War II, another source of development funds was found: the Federal government. The Gulf Coast was less vulnerable to enemy attack than other refining centers, and became a favored site for the expansion of refining required by the war effort. The region's locational advantages were enhanced when the Federal government constructed the first pipelines from the Gulf Coast to the East Coast. The government also invested a half billion dollars at or adjacent to existing refineries in an effort to guarantee adequate supplies of essential war materials (Pratt, 1980).

Corpus Christi and the Coastal Bend region benefitted modestly from this war-time influx of capital, but expanded and diversified rapidly in the 1950's as the petrochemical industry,

drawing its feedstocks from petroleum refineries, grew in exponential fashion. The production of primary metals contributed to this diversification. Reynolds Metals Company began constructing a plant in San Patricio County in 1951, with easy barge access to its bauxite mines in Jamaica and to local reserves of natural gas to fuel its reduction operations.

The maturing industrial landscapes around Corpus Christi and Mobile share a commonality. They now comprise a complex mixture of both backward- and forward-linked firms, some supplying goods and services to the oil and gas industry, some utilizing that industry's outputs for further production (cf. Pratt, 1980). Louisiana, State-wide, has a similar mixture, but it is differentially located. Forward-linked refineries and petrochemical plants are located around Lake Charles and Baton Rouge; backward-linked production activities center along the bayous, canals, and marshes of south Louisiana, and out onto the continental shelf. The magnitude and the stability of the workforce differs accordingly: forward-linked refining and chemical sectors are relatively stable and increasingly automated. Backward-linked production is volatile (see Figure 6-2).

South Louisiana's industrial landscape is now backward-linked. Until the 1950's, local residents subsisted on the products of the land, marsh, and water. In the 1960's, the area hosted, serviced, and endured the development of marshland and close offshore oil exploration and production. It was not until the 1970's that the local manufacture of the specialized craft for offshore exploration and production began. And it was only in the last decade that the docks at Port Fourchon were put to the service of deepwater activities.

All three of these areas -- Coastal Bend, south Louisiana, and Mobile Bay -- industrialized less around a pool of Depression-scarred low-wage laborers than around the location of resources and the morphologies of the Gulf Coast. But the landscapes that have been constructed there are indelibly shaped by forces and demands outside the region.

Today, the South is as integrated into the global industrial economy as it has historically been involved with world commodity markets. Especially in recent years, German firms have found lucrative opportunities in the South. German worker costs are the highest in Europe, and environmental regulations (particularly with the Greens sharing government power) relatively strict. Firms seek locations with lower labor costs and weaker regulatory structures. The location of a BMW plant in South Carolina, a Mercedes factory in Alabama, and Hoechst-Celanese and BASF facilities in North Carolina, reflects this migration. German workers are very much aware of these developments and, in cooperation with unionists in other European countries, have formed the Transnational Information Exchange (TIE) to assist workers in low-wage countries (including the American South) in organizing labor unions. While German car manufacturers have been welcomed by civic leaders and workers alike, German chemical firms are increasingly experiencing opposition in the American South as environmental awareness and activism grow among citizens. This is especially so in areas of affluent populations and leisure activities (cf. Samuel, 1998).

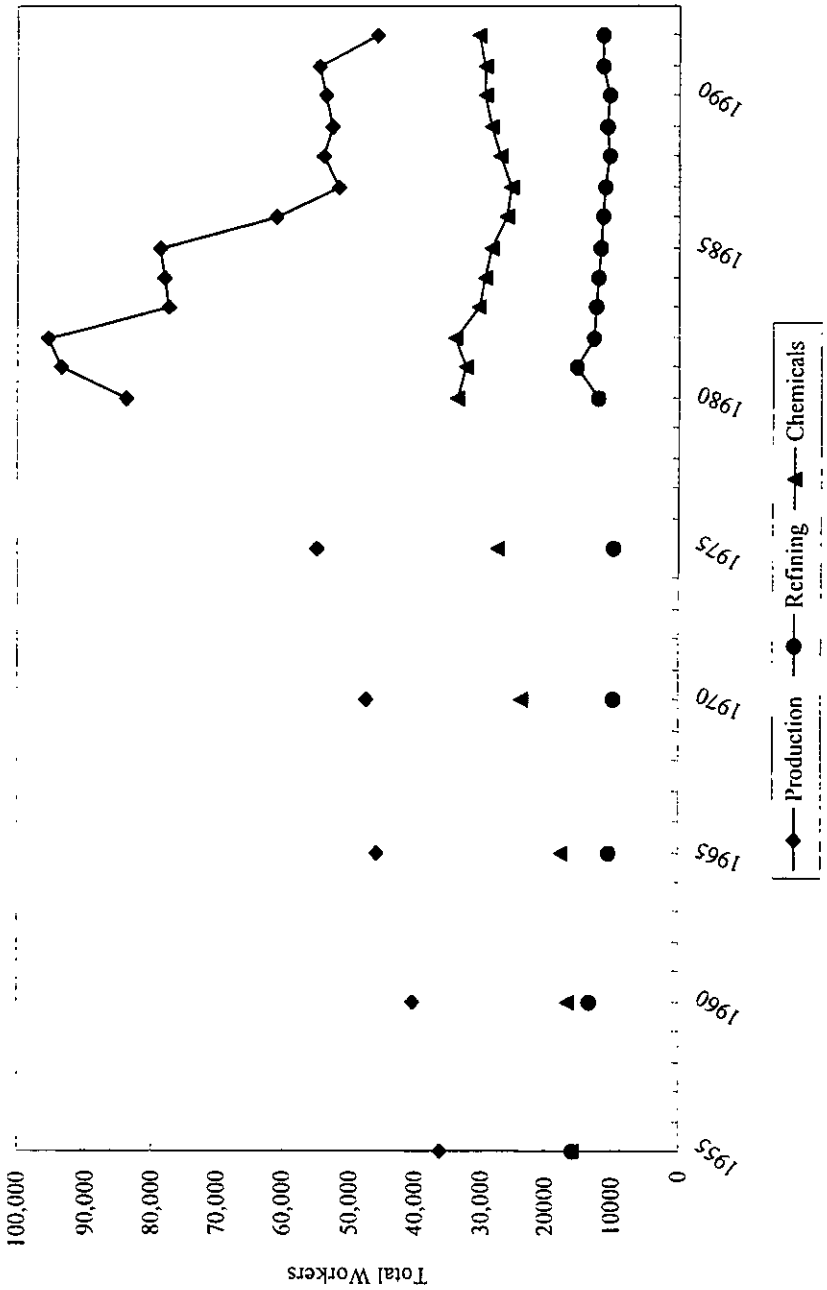

Figure 6-2. Workers in the oil and gas industry in Louisiana.

Source: Louisiana Almanac, 1998.

6.4.1 The Evolution of an Industrial Landscape: Theodore, Alabama

In May 1998, Alabama's Department of Environmental Management (ADEM) convened a public hearing on a request from Phenolchemie Inc. for air pollution permits. The company, a subsidiary of the German chemical conglomerate VEBA AG, proposed to construct a $200 million plant in the Theodore Industrial Park on the west bank of Mobile Bay to process feedstocks of cumene into phenol and acetone. In turn, according to the company's literature, these products would be used in the manufacture of a large variety of common end products, including aspirin tablets and other pharmaceuticals, compact discs, nail varnish remover, resins, fibers, paints, detergents, and cosmetics.

Phenolchemie's fact sheet, prepared for the public hearing, detailed a wide range of benefits the new plant would provide to the area, and sought to deflect the mounting criticism. The German firm went to some length to explain its siting decision:

> Phenolchemie has enjoyed an excellent reputation in all its plant communities, with its workers, and local environmental and health officials, which is why we hosted Mobile area representatives to experience this first hand at our other plant sites. Workers in the Mobile plant will be compensated at an average salary of $40K/year, a much higher-than-average compensation in this area. Phenolchemie chose Mobile as its preferred site because of the excellent accommodations presented by your State Docks and the Theodore Industrial Canal, by your skilled workforce, quality of life and cooperation of local and State officials. Key to our decision is that Mobile presents an ideal manufacturing location to better and more efficiently serve our growing North American market... (Phenolchemie, Inc., n.d.).

Local benefits, the company promised, would include a workforce of 130 to 140 persons, $7 million in local school taxes over 20 years, and an intent, on the part of Phenolchemie, to be "the good community citizen it has been for over 40 years" (Phenolchemie, Inc., n.d.). These benefits, it was suggested, would more than offset the property tax abatement offered by local officials as part of their recruitment package. And to address local concerns, the company alluded to its record in the home plants in the Ruhr region and Belgium:

> Phenol is classified as a toxic, like many other chemicals found in beneficial consumer products, including pharmaceuticals. Phenolchemie is proud that its high quality standards, certified by the International Standards Organization (ISO), have minimized any effects that toxics may otherwise have on human health and the environment. In fact, Phenolchemie plants have the proud distinction of no reportable accidents involving human health, safety and the environment in over 20 years (Phenolchemie, Inc., n.d.).

West Bay Watch, a citizens' group composed largely of relatively affluent residents of Mobile Bay's western shore, prepared its own fact sheet. In a question and answer format,

West Bay Watch asked itself what Mobile County would receive for the $8.5 million tax break offered to Phenolchemie:

- Although plant officials have promised that 100 new jobs will be created for Mobilians, many industries as well as thousands of individual livelihoods may be threatened by the plant.

- Mobile's tourism industry, which brings thousands of people to the Port City each year, will be endangered and Mobile as a convention and leisure destination will be at risk. Additionally, the proposed Phenolchemie plant just a few miles from the proposed walking/biking trail and 2,000-foot fishing pier at NcNally Park are contradictory in nature.

- Like areas in Texas which have already experienced property devaluations near growing chemical industrial complexes, Mobile's real estate industry may also be hit hard as residents experience a decline in their property value if this type of chemical industry continues to move into our county.

- As for Mobile's seafood industry, a phenol spillage could totally destroy a multi-million dollar industry, which feeds our county both economically as well as literally (West Bay Watch, n.d.).

The sides converged at the public hearing at the Convention Center in downtown Mobile on May 11, 1998. The hearing promised to be, as stated by its moderator Ron Gore, chief of ADEM's air quality division, "a very formal process of asking questions and making statements" (Mobile *Register* May 11, 1998). One of the statements was reported in the Mobile newspaper the following day:

> There was Frances Ankersen, whose family has owned property in Belle Fontaine for 50 years. "Why are the Chamber of Commerce, the Mobile Industrial Development Board, Mayor Mike Dow and others determined to ruin the lives of the residents of south Mobile County?" Ankersen said, referring to the local agencies which recruited Phenolchemie. "Why are they determined to change the name of our beautiful bay into Mobile Industrial Ditch?" (Mobile *Register* May 12, 1998).

The Alabama Department of Environmental Management dutifully responded to the public comments with the summary preface:

> Based on our review of the comments received and the applicable regulations and statutes, the Department has concluded that the proposed permits, as drafted, would comply with ADEM regulations. ADEM plans to issue Air Permits for the proposed facility in the near future (cover letter, undated, Ronald Gore to "interested parties").

From the comment and response document that accompanied Ronald Gore's letter to interested parties, two entries are worth arraying:

> Comment 5: Several commentators stated that Mobile/Theodore already has too many chemical plants and that ADEM should deny any additional permit applications from polluting industry.
>
> Response 5: The Department must review each permit application based on the ability to meet all applicable State and Federal air regulations and air quality standards. The Department cannot deny a permit based on the number of facilities located in a particular area if all standards and regulations are met.
>
> Comment 10: Several Commentors stated that permits should be denied to Phenolchemie because the surrounding community does not wish to have any additional industry.
>
> Response 10: Any comments concerning zoning are within the jurisdiction of local zoning and planning authorities and should be addressed to those agencies.

Phenolchemie's plant is now under construction and on schedule in the Theodore Industrial Park. West Bay Watch subsequently renamed itself "Mobile Bay Watch" and is continuing to appeal the string of decisions which gave birth to the Phenolchemie complex. The site is a mile or so south of where the U.S. Navy located a munitions dump during World War II.

6.4.1.1 Theodore's Munitions Dump

Among the spoils of the Allied victory in the war were Germany's stockpiles of unused munitions, and a site off Mobile Bay was selected as one disposal area. The 24-acre plot off Hamilton Road is the visual remnant: a 20-foot mound of dirt, fenced off with U.S. Government Property signs and trespass warnings. In the 1940's, the 1,850-acre Theodore Naval Ammunitions Depot had a more obtrusive life.

In June 1946, the Liberty ship *Francis L. Lee* docked at the landing facility on the bay at Hollingers' Ship Channel with a cargo of bombs for temporary disposal at the Theodore depot. The 3,860-ton load of mustard and phosgene gas aerial bombs, manufactured in Germany's Ruhr Valley, was acquired in Antwerp by the ship's agent, the Stracham Shipping Company. The company supplied the civilian stevedores to unload the bombs, under supervision of Army chemical weapons experts.

Twenty black stevedores were admitted to the City Hospital on Monday, June 17, 1946, for mustard gas burns. Another 18 had to be admitted after working aboard the ship Tuesday morning. Mobile's *Press Register* covered the incident:

> Although a Navy spokesman at Theodore stated cause of the burns was vaporization of mustard gas due to 105-degree temperatures in the ship's hold, most of the victims reported ropes and wooden cases binding the single bombs were wet, and they believed the moisture was liquid gas.
>
> When questioned at the hospital, all said Hold Number Two of the *Francis L. Lee* was filled with gas fumes Monday afternoon. None reported any effects until several hours after their work was completed. Each victim said he was unaware of his condition until Tuesday morning, when blisters developed (Mobile *Press Register,* June 19, 1946).

Unloading operations were halted Tuesday following an inspection by Army chemical warfare technicians, one of whom received second-degree burns.

Unloading resumed under the supervision of personnel from the Edgewood, Md. Arsenal. The *Press Register* returned to the story in July, allowing Capt. John Helm, Jr. to detail the protective and procedural measures taken. Capt. Helms remarked that the burns received by the stevedores "was [sic] through their own carelessness" in removing their masks to wipe off moisture. Reporters seems satisfied that the damage was small:

> Burns resulting from the handling of the cargo here were described by medical officers as similar in appearance to those caused by excessive sunlight but without the accompanying pain (Mobile *Press Register,* July 16, 1946).

And Capt. Helm assured reporters that the problem of faulty gas containers was being resolved:

> All the leaky containers are hauled out into the waters 35 miles from the docks and dumped overboard. The bombs are placed on a barge and towed by an Army tug. A convenient muddy bottom is sought so the shell will immediately anchor itself and stay put (Mobile *Press Register*, July 11, 1946).

In August, the ship, with 600 to 900 tons remaining of its original cargo, sailed to Edgewood Arsenal (*Harbinger,* July 27 - August 9, 1993). The following year, the Mobile newspaper picked up two additional stories. One of the men injured the previous June entered a suit against the Federal government, contending that

> he lost the permanent full use of his vocal chords when mustard gas leaking from a bomb burned his hands, face and the inside of his throat. He says he now is able to speak only in a whisper (Mobile *Press Register,* August 12, 1947).

And the paper reported on the complaints of fishermen from West Florida that the millions of tons of dead fish that washed up on beaches were casualties of the disposed mustard gas

bombs. Government experts countered with the suggestion that the deaths were due to "an oceanic organism which is depleting the section of oxygen and causing the fish to asphyxiate" (Mobile *Press Register,* January 25, 1947).

In the 1950's, the Defense Department proposed to expand the Theodore Ammunition Depot by 8,600 acres to create a safety zone. A committee of prominent Mobile business and political leaders quickly marshaled opposition to the plan, citing threats to the city's populous from increased ammunition handling, loss of recreational areas on the west side of the bay, displacement of 2,000 homeowners, hardship and suffering of new families buying homes in the area, and, perhaps most significantly, the threat such an expansion would cause for the city's own desired expansion. Alabama's congressional delegation deferred to the wishes of the Mobile "citizens' committee" and to south Alabama's Representative Boyken, although several admitted that the Defense Department "does not actually need approval of two congressional committees -- the Senate and House armed services committees -- to proceed with the project" (Mobile *Press Register,* March 24, 1953).

The expansion did not take place, in any event. Rather, the government declared the depot "surplus" in early 1965 and the 1,825-acre property was acquired by the Alabama State Docks and the City of Mobile's Industrial Development Board. The purchase was "finalized by revenue bonds secured by the property and a State Docks lease with the Industrial Development Board. This property formed the nucleus of what has become the Theodore Industrial Area" (Mobile Chamber of Commerce, 1978).

That same year, the Air Force announced that Brookley Field on the outskirts of the city (see Section 6.5.1.1 below) would close down over the course of several years -- a move which local observers saw as retaliation by Lyndon Johnson against Mobile for its support of Barry Goldwater in the 1964 presidential elections. The City of Mobile prepared to take over the base and hone its strategy of employing long-term, tax-free industrial development bonds to attract diversified trade and manufacturing (Cherney, 1995).

Mobile's alternative newspaper, the *Harbinger*, revived the story of the ammunitions depot in a 1993 article. The media spokeswomen for the State Docks was queried about the depot and its history, and responded that " 'not a soul here would have any knowledge' because it happened too long ago." She added that she had never heard of the *Francis Lee* either. "News to me," she said. The *Harbinger*'s primary point, apparently, was to remind readers that the depot remains on the Army's list of "Potential Ordinance/Chemical Contaminated Sites" (*Harbinger,* July 27 - August 9, 1993).

6.4.1.2 The Beginnings of an Industrial Zone

Theodore Industrial Park had yet to take on its own identity when the first tenant arrived in 1967. In January, the project development manager for McWane Cast Iron Pipe Company announced at a luncheon of the Mobile Area Chamber of Commerce that construction had

begun at the "Theodore Ammunition Dump." Warren C. Jeffrey demonstrated the product his company would produce -- a new cast iron processing method that would yield a highly ductile and easily machined metal. The plant itself would feature a 16-story tall electric furnace, and would employ 95 personnel. The Mobile *Press Register* reported on the luncheon:

> Jeffrey's address climaxed a day of activities of the Chamber which included the announcement by Lt. Gen. W.K. Wilson (retired), chairman of Task Force 200, of the commitment of $122 million in new and expanded industries during 1966. This will bring to Mobile 3,000 new jobs (Mobile *Press Register*, January 24, 1967).

The 1960's were difficult times for Alabama's economy, so McWane's announcement was welcome. Racial conflict culminated in violence in Martin Luther King's first march from Selma to Montgomery to demand voters' rights. The clubbing of marchers by State troopers was broadcast on the national evening news. Under the protection of a Federalized Alabama National Guard, Dr. King and 25,00 marchers did reach the capitol in March. Governor George Wallace viewed the protest from inside. In August, Lyndon Johnson signed the Voting Rights Act and Federal officials were sent to oversee registration. Whites in the State retreated further into the segregationist views of Wallace and Wallacism, and the "negative national stereotypes" of Alabama persisted (Flynt, 1994). As historian Flynt notes, without hyperbole, "During the 1960's the State's reputation for conflict and violence placed added pressure on industrial recruitment" (1994).

In this climate, the proactive intervention of Mobile's Industrial Development Board, the Chamber of Commerce, and the Alabama State Docks were essential to the growth of Theodore Industrial Park. Between 1965 and 1968, the State Docks acquired additional acreage to expand the site to 4,000 acres, and dredged a barge canal up the Middle Deer River to McWane's foundry. And the city's civic leaders recruited new tenants, with some success. Marion Corporation opened a refinery in 1967, with 60 employees. Hallmark Homes and Mobile Paint Company came in the late 1960's. The major boost came in 1973, when Degussa Corporation, subsidiary of Degussa AG of Frankfort, Germany, announced plans for a $200 million investment and a promise of 1,000 jobs.

Degussa recounts some of its own history in a corporate profile in *Mobile: A Gulf Coast Treasure*, produced in cooperation with the Mobile Area Chamber of Commerce:

> Mobile was the location of choice made by a site selection team that scrutinized 16 potential plant sites. The team was looking for a location that provided a strong labor force, a variety of transportation opportunities, access to natural resources, and tax and incentive structures. Mobile met all these requirements plus one -- an overwhelming desire to welcome Degussa as a corporate citizen of Mobile (McDonnell, 1994).

Through the 1970's, others followed Degussa. Kerr-McGee Chemical Corporation came the same year. Two cement plants started in 1974, along with a wood products mill. Union Carbide, International Cylinder, and Kay-Fries Chemicals began operating at the Park between 1975 and 1978 (Theodore Industrial Area, n.d.). In a promotional brochure put out by the Chamber of Commerce's Economic Development Department around 1978, is was rightfully claimed that the "Theodore Industrial Area has emerged as a prime area for new industrial facilities."

There were some failures along the way. McWane Cast Iron and its successor, Airco Alloys and Carbide, fell victim to an economic force emerging in the late 1960's: foreign competition. Airco acquired the McWane facility in 1970 and began ferroalloy production in January of 1971. In 1987, it announced its closure, due, according to company president John Johnstone, Jr., to the "massive, unrelenting flow of low-priced imports of manganese ferroalloys" from South Africa, Mexico, Brazil, and Portugal. The executive observed that "a U.S. government edict allows these countries to ship these products into this country entirely free of duty." Johnstone went on to promise the 95 terminated workers that the company "will encourage the International Steelworkers Union to file for Adjustment Assistance under the 1974 Trade Act, and will render every effort to assist in job placement elsewhere" (Mobile *Press Register* September 25, 1978).

In truth, the employment expectations of the Theodore Industrial Park seem never to have been realized. In a critical self-examination for the purpose of fostering Mobile's application to the National Civic League for "All American City" designation, it was acknowledged that by the late 1980's, the park employed some 1,500 persons, not the initially anticipated 4,000 to 5,000 (Cherney, 1995). Interestingly, the author attributes this to the legacy of World War II:

> The war set the stage for unions-corporations conflict that largely determined the decisions that were made in economic development for decades. Unions that grew in government-financed war industries, were resistant to wage reductions in the post-war economy.
>
> When business leaders mounted a campaign to recruit new industry to replace the jobs lost by the closing of Brookley Air Force Base, they had difficulty recruiting labor-intensive firms. Too high wages demanded by the unions was the deterrent. For that reason, corporations that did locate to the Mobile area tended to be capital-intensive and highly automated (Cherney, 1995).

Guardians of the park recognized early in the process that successful development was predicated on navigational improvements. Alabama State Docks took one initiative dredging a barge canal 2 miles into the heart of the park. This caused some local consternation, as the Dauphin Island Parkway was cut, necessitating a 5-mile detour around the industrial park and the canal. A more ambitious development was predicated on this modest barge canal,

however. In 1970, the Senate Public Works Committee and its House counterpart authorized the Theodore Ship Channel, at a Federal cost of $40 million, to provide 40-foot deep water access to the industrial park.

The requisite environmental impact assessment by the U.S. Army Corps of Engineers provides a very sketchy glimpse of the community around, and in, Theodore Industrial Park in 1977:

> The Theodore area is outside the city limits of Mobile and the town is not incorporated and has no government bodies or elected officials. Although there are no community governmental bodies serving the area, community cohesion is not lacking. Two small lobby groups operating south of the project area are working for the replacement of the bridge over Deer River. Although blacks comprise a relatively small percentage of the project area population, there are several active community action groups...
>
> The project area is experiencing a conflict in land use: the commercial and industrial land uses are expanding to the detriment or at the expense of residential areas on either side of the existing waterway into the Theodore Industrial Park... The pollutants from the existing industrial plants have decreased the recreational opportunity of the Deer River... (U.S. Secretary of the Army, 1978).

The Corps' impact assessors did predict some social change for the community:

> Further industrialization of the Theodore Industrial Park is expected to result in a rapid increase in the local population. As a result of this, the characteristic rural community relationships will be altered in the area of the project site to approximate more closely urban relationships, where the number of personalized relationships are proportionately few (U.S. Secretary of the Army, 1978).

To be sure, the issue of incorporation arose several times in the 1970's in the Theodore/Tillman's Corner area. The first occurred in 1973 in Tillman's Corner. A local attorney, Dan Alexander, and a real estate agent began to drum up public support for incorporation of the fast-growing area on Mobile's outskirts. They broached the notion to residents at a meeting at a local school on March 27th. That morning, however, the Mobile City Commission had passed a resolution calling for a vote on annexation and filed the resolution with the Probate Court in the city; the move would force a vote on annexation, and would preclude a vote on incorporation. City Commissioner Joe Baily, the annexation proponent, attended the meeting that night called by the incorporation proponents. Alexander consented to let Commissioner Bailey speak briefly on the benefits in being annexed to the City of Mobile. He promised that, according to State law, the residents would be exempt from city property taxes for 10 to 15 years and businesses would be exempt from city licenses for the same period. The city's resolution of annexation also stated that:

> On any tract of land containing 10 or more acres, which is used for dairy, poultry, or farm purposes, the provisions of city ordinances relating to livestock or the building codes of the City of Mobile shall not be applicable during the time such land is exempt from city taxation (Mobile *Press Register,* March 29, 1973).

Attorney Alexander of Tillman's Corner touted the benefits of incorporation against annexation. A new municipality would retain a 2-cent gasoline tax, currently split with the city, and the 1-cent sales tax. The sales tax had been going to the city to underwrite police protection for the area. Alexander speculated that no additional taxes would be required for the first year to run the new local government. Queried from the floor on what would happen after the first year, Alexander suggested that "That's up to who you elect to office." (Mobile *Press Register*, March 28, 1973).

A columnist for the Mobile *Press Register* opined that there was more at stake:

> One big "what" is that Tillman's Corner is located not too far from where Mobile Greyhound Park, Ltd., is constructing a dog track. Prospective city boundaries could be drawn around this site very simply.
>
> Such a development has already been anticipated, according to some sources in Montgomery where legislation is reportedly being drawn which would disallow annexation of a dog track by any city (Mobile *Press Register*, March 28, 1973).

The vote on annexation came on May 9, and was rejected by a margin of more than 3 to 1, perhaps a reflection of the sentiments expressed by one speaker at the March meeting: "We don't want any more government than we already have" (Mobile *Press Register*, March 28, 1973).

The City renewed its annexation drive in 1976, for an even larger area to surround Theodore Industrial Park (though businesses in the complex would continue their exemptions from city ordinances). This effort failed as well, but it revived, briefly, an effort by local residents to incorporate. One resident of Theodore expressed her opposition to annexation in a letter to the city's newspaper in no uncertain terms:

> We live outside of the city limits because we choose to do so; in fact, a very high number of people moving to our area have come from inside the city limits. They are fed up with having to live with the political strife and internal conflict among the people at City Hall...
>
> We live outside the city limits because we can keep horses, chickens, and other animals if we so choose; forego compulsory sewer and water systems; let our dogs outside without leashes; remodel or add onto our homes without building permits -- need I list more? (Mobile *Press Register* , February 7, 1976).

And a State senator from Mobile County vowed to fight any bills in the legislature to either annex or incorporate the area "unless the people clearly say that's what they want" (Mobile *Press Register*, March 16, 1976).

Though rarely stated publicly, racial sentiments also fueled anti-annexation views. During the 1970's, a number of southern cities, including Mobile, sought to capture their fleeing population and economic base through annexation. Part of the reason for this was economic, to be sure; but also, some civic leaders expressed concern that as the percentage of black voters increased, they would take control of local government, a process which had already occurred in Atlanta, a city barred from annexing additional territory. Unincorporated suburban jurisdictions, on the other hand, wanted to remain aloof from the economic, educational, and racial problems of the city that many residents had escaped (cf. Silver and Moeser, 1995).

6.4.1.3 The Ship Channel

The presence of the McWane/Airco cast iron operation in Theodore Industrial Park loomed large in the efforts to authorize, then justify, the Theodore Ship Channel as a Federal project in the 1970's. Hollingers' Channel, dredged to 32 feet by the government to service the munitions depot, had not been maintained over the years and had shoaled to 11 feet. McWane and Airco had been forced to import their raw material through the bulk materials handling facility at the Port of Mobile, then transport it on shallow-draft barges to the foundry in the industrial park. Airco officials, responding to the Chamber of Commerce's solicitation of statements for the public hearing on the ship channel project in 1974, enumerated the many problems with this procedure:

> (1) Difficulty in coordinating the arrival of the vessel and barges for the movement of ores from the Bulk Terminal to our dock at Theodore. When Airco Alloys first took over the Theodore plant in 1971 and we imported a cargo of Manganese Ore, a request was made to store the ore at the port Storage area. No space was available and the situation is the same today. (2) Equipment breakdowns at the Bulk Terminal... (3) Congestion at the Bulk Terminal frequently causes delays in berthing vessels. This creates vessel demurrage problems. (4) At times it is impossible to tow barges from the Port of Mobile to Theodore due to high winds, fog and rough water in Mobile Bay (Calvin Lamb to Mobile Area Chamber of Commerce January 16, 1974).

Airco acknowledged that it had not imported any manganese ore in 1973; rather, it drew upon inventories in hand. But it projected a plant expansion and an import tonnage of 250,000 tons by the year 1979.

The Corps of Engineers concurred with the "local interests" which had succeeded in winning Congressional authorization for the deep-draft channel in 1970. It was in the national interest to maintain the competitive position of Mobile's port in international commerce and trade;

improved facilities would assure the supply of imported petroleum on the best possible terms; and the channel project would be beneficial to labor, business, and industry in the area (U.S. Secretary of the Army, 1978). Though this was not used to justify the Theodore Ship Channel, it was anticipated that the traffic on the Tennessee-Tombigbee Waterway, which the Corps began constructing in 1972, would overwhelm Mobile's existing port facilities. As it turned out, Tenn-Tom did not prove to be the economic generator its advocates had predicted (cf. Rogers, 1998).

The Corps concluded that whatever adverse effects the ship channel might have were "either ameliorated or substantially outweighed by other considerations" (U.S. Secretary of the Army, 1978). Construction was completed in 1981, at a Federal cost of $53.5 million and a local cost of $3.4 million, consisting primarily of right-of-way land within the industrial park owned by Alabama State Docks. The primary features are a 5.3 mile, 40-foot deep channel from the main navigation route up Mobile Bay, extending another 2 miles into the industrial park to the Airco plant which had already closed by 1978, and, from there, a 12-foot barge canal extending another mile or so into the park. Out in the bay, the Corps built an island of disposal material.

The Alabama Highway Department maintained that the cost of reconstructing the bridge over the enlarged ship channel into the industrial park was well beyond its financial capabilities, so it eventually bridged the narrow barge canal further inland. The logic of local citizens, expressed at the public hearing over the ship channel project in 1974, was irrefutable but inconsequential:

> We have been told by Alabama State Dock personnel, that due to the closing of the McWane Iron Co., the need for a ship channel into the Theodore Industrial Parkway [sic] does not exist now past the shoreline. Yet, we have been without a bridge, detoured six years by someone's error...
>
> As you know, Mobile Countians were promised by the State of Alabama, that a bridge would be re-built and that the detour was to be temporary. We want you to know how frustrated the people who live in the area feel over the protracted delay in a decision to re-build our bridge over Middle Deer River on Dauphin Island Parkway (letter from Mrs. Henry R. Adams, Chairman, Belle Fontaine Committee for Bridge Over Deer River on DIP, to Mobile District, Corps of Engineers, January 19, 1974)

There is a $77 million footnote to the Theodore Industrial Channel. Local officials were successful in the mid-1980's in winning one of the U.S. Navy's "homeports," constructed on the turning basin of the ship channel. Naval Station Mobile,

> which was home to four Navy frigates, had been open less than a year when it was announced in March 1993 that it and 31 other major bases were targeted for closure. Upon its return to the State Docks, which was the original owner, the Mobile

> Homeport Reuse Committee began looking for new ways to make use of the base (McDonnell, 1994)

The saga of Naval Station Mobile (as well as Brookley) underscores that Federal military largesse is often as aribitrary as the oil industry. The political clout of Texas compared with the relative weakness of Alabama is part of the tale of the two homeports, Mobile and Ingleside.

6.4.1.4 The Gas Plants

West Bay Watch, with its protest of Phenolchemie, is not the only environmental group in south Mobile County, nor is Theodore Industrial Park the only feature of the area's industrial landscape. In 1982, the Mobile County Commission designated 2,000 acres around the unincorporated town of Coden as the Bayou Jonas Industrial Park, at the request of Mobil Oil Company. The company wanted assurances that its proposed sour-gas processing plant would be protected from potential municipal annexation and additional taxes (Mobile *Register,* May 14, 1998).

The previous decade, Mobil had gone through extraordinary efforts to obtain the necessary permits for the onshore plant to handle gas from the tracts it had leased in the State waters of lower Mobile Bay. In the aftermath of the oil spill off the California coast in 1969, the State was reluctant to approve Mobil's plans. After several years of delay, the Alabama Oil and Gas Board convened a hearing over proposed rules and regulations for Mobil's operation in 1972. William Wade gives a brief account of the meeting in his history of gas development in coastal Alabama:

> The meetings introduced outspoken interveners to drilling from Fairhope, Save Our Bay, who preferred to be called the "SOBs." Mrs. Myrt Jones, President of the Mobile Bay Audubon Society, became and remains an outspoken advocate for environmental positions. A professor of Coastal Geomorphology from the University of California at Santa Barbara, Dr. Norman Sanders, delivered lengthy testimony about spills in the Gulf of Mexico, claiming that "Red Adair would be on welfare... if oil well drilling technology was as well developed as the oil companies say." The decision to adopt the proposed rules was delayed and pushed up to the Governor (Wade, 1999).

After three court cases, promises that the company would follow a zero-discharge policy, and the posting of a $55 million bond, the Oil and Gas Board allowed Mobil to begin exploratory drilling in 1978. It discovered gas in the Mary Ann Field between Dauphin Island and the Fort Morgan Peninsula in 1979. Additional permit struggles ensued, but by 1982 the company was ready to begin production.

Mrs. Jones appeared again at the hearing over the gas plant permit in January 1982. She characterized company officials as "a bunch of robots saying half truths" and described the proposed plant as a "dirty, dangerous facility in a high flood area" (Mobile *Register,* May 14, 1998). Nonetheless, 300 people signed a petition in favor of the plant, the County Commission unanimously approved the establishment of the Bayou Jonas Industrial Park, and Mobil began onshore construction. Shell's onshore Yellowhammer facility along the Dauphin Island Parkway came on line in 1991. Exxon, as well, began to explore its State and Federal leases in the late 1980's and finished construction on its onshore processing facility in 1993. The southernmost part of Mobile County had become an industrial landscape. By 1998, the roster of companies in and around Jonas Bayou included Transcontinental Gas Pipeline, Williams Field Services, Duke Energy, Air Products and Chemicals, Inc., as well as Mobil, Shell, and Exxon.

The target of this activity, for which each of the majors invested over $400 million, was the Norphlet formation gas, 21,000 feet under Mobile Bay and adjacent Federal waters. Norphlet gas is "sour," high in methane, hydrogen sulfide, and carbon dioxide. But with the pricing incentives given to new gas discoveries in President Carter's Natural Gas Policy Act of 1978 (cf. Stobaugh and Yergin, 1983), it held the potential for profit. While the companies are still endeavoring to recover their investments [AL-TM-014], the State and the Federal governments reaped some benefits -- $1.36 billion in lease payments between 1981 and 1984 (Wade, 1997). Alabama's share was placed in a trust fund. These were augmented the State's 27 percent share of Federal royalties from the "8(g)" tracts. Through a 1986 amendment, section 8(g), to the Outer Continental Shelf Lands Act, the Federal government agreed to return this portion of lease revenues on blocks in a zone from 3 to 6 nautical miles offshore in Federal waters (Wiygul, 1992). Together, these sources yield interest income on the order of $100 million annually for the State's General Fund (Wade, 1999).

But few local jobs were generated in south Mobile County. Shell's Yellowhammer operation requires 23 technicians and 14 staff. Its offshore production platforms, also highly automated, are watched by "four crews of two technicians each" (Wade, 1999). Some 6 percent of Mobil's onshore and offshore workforce live within a 10-mile radius of its Mary Ann facility. When Transcontinental was contracted to build the pipeline to the new Williams and Duke plants in late 1997, it recruited its welders from Mexico and south Texas. Receiving a living stipend of $40/day in addition to wages of roughly $7/hour, the crew housed itself in a Theodore motel, three to four to a room, each room equipped with a small refrigerator and hot plate. One worker estimated that he spends $200 a week on living expenses and is thus able to remit $600 to his family back in Harlingen, Texas. All agreed that the pipe-laying work in Alabama is tougher than on the compacted soils of Texas: "For instance, a ditch that would require one week to dig in Texas may take three or four in Alabama, with its marshes and wetlands" (AL-JB-019).

The residents of Coden and the nearby subdivisions of Bayou Jonas and Bayou Shores were concerned not so much with the lack of local employment as with the activity associated with

Mobil's development of the Aloe Bay Field off the north shore of Dauphin Island. They formed the South Mobile County Community-Industrial Advisory Committee and convened in January 1998, to draw up a list of questions and concerns, to which Mobil gave written responses. About 150 neighbors attended. A major complaint centered on the plant's practice on night-time flaring, burning off hydrogen sulfide gas "with a roaring flare stack that turned the night sky orange," according to residents of Bayou Jonas (Mobile *Register*, May 14, 1998). The practice had increased during the Christmas season; Mobil had completed a plant expansion and was testing the new facilities. The routine testing also coincided with the ongoing construction of several other facilities in the industrial park. Residents complained of eye, skin, and respiratory problems. The company responded that

> Flaring is designed for safety and emergency situations only. Flaring reduces pressure on the system and enables operators to work safely and to pro-actively perform routine maintenance or construction. Mobil does not anticipate the same frequency of flaring in 1998 as compared to 1997 due to fewer planned construction projects (Mobil Oil Company, 1998).

Only a third of the number of local citizens turned out for the followup meeting in May to hear the company's answers. One local resident was disheartened by the showing: "People are not making enough noise" (Mobile *Register,* May 16, 1998). The committee vowed to have another meeting. The company promised to revitalize its "Community Awareness" open house at the Mary Ann plant and to continue its contributions to a number of civic activities and fire and rescue units. Shell Yellowhammer employees have adopted a portion of Dauphin Island Parkway running past the plant.

6.4.1.5 Summary

The development of natural gas in Mobile Bay and off the coast of Alabama solidifies south Mobile County as a major petrochemical zone on the Gulf Coast. It is a corporate landscape, but one that received a great deal of public help along the way. The war-time munitions depot set the tone for development; industries compatible with such land uses would eventually arrive. Alabama State Docks would become a major landlord. Mobile's Industrial Development Board would grant liberal abatements and attractive loans. The Federal government would dredge and maintain the shipping channels and construct a homeport; the State Docks and the Mobile Chamber of Commerce are now actively seeking corporate clients for the facility. One prospective tenant is a steel mill.

Residential areas of Theodore, Coden, and the shoreline of west Mobile Bay grew as industry arrived, incrementally. Private homes lie across shell roads from sour gas plants and chemical refineries. Gas pipelines run through the marshlands next to schools and tourist plantations. Chemical trucks share the highways with pickups pulling fishing boats. The inhabitants of south Mobile are now sensing that they have had enough industry. But by

choice, they remain steadfastly unincorporated, unzoned, and unable, for the most part, to alter the industrial landscape.

6.4.2 Backward Linkages: Bayou Lafourche and Port Fourchon

Elsewhere along the Gulf Coast, the industrial landscape has been shaped by backward linkages to the offshore oil and gas industry. There was a frenzy of boat-building and boat-buying along Bayou Lafourche in the 1970's, as offshore oil activity increased in the Gulf of Mexico and the North Sea. But the tradition goes back to the early days of oil work in the marshes and near-shore waters of south Louisiana. The story of the Cheramie brothers is not atypical:

> In 1947, Minor J. Cheramie Sr. of Golden Meadow, La. was working as captain aboard a wooden air-sea rescue boat which had been converted to a crewboat servicing Humble Oil Company's original Platform "A" offshore Grand Isle.
>
> A tall, muscular South Louisiana Frenchman with a dynamic personality, Cheramie had previously served as deckhand on the tugboat "Alamo" owned by his friend and neighbor, Elfer Guidry.
>
> One day while he was taking on supplies in Leeville, Cheramie crossed paths with workboat owner Otto Candies of Des Allemands, La., who offered to help negotiate a contract if Cheramie could come up with the funds to purchase his own crewboat.
>
> "I had $3,000 in the bank but we needed $7,000," Cheramie recalled recently during a visit to his offices on Bayou Lafourche. "So I made a deal with Edmond Duet to build a wooden 32-foot boat with a Nordberg gas engine. It carried nine passengers and had a top speed of 32 mph. Because we were short on funds, Duet permitted me and my wife to caulk and paint the boat on my days off, helping shave the cost by $1,000. Between us, Lou Ella and I had the boat ready for operation on Mardi Gras Day of 1948, carrying roughnecks to a rig on Duck Lake near Morgan City" (*Engine News Staff*, 1978).

With a brother, Cheramie organized a company in 1950 and acquired additional crewboats and tugboats. Later in the decade the brothers adopted a car ferry design -- with a broad afterdeck and forward deckhouse -- into the "botruc" for carrying supplies to the oil field. By the 1970's, Cheramie Brothers Botruc Rental, Inc., had a fleet of 30 boats chartered out to oil companies, all modified around the original design and built by shipyards along the Intracoastal Waterway.

There are similar stories. One tugboat operator recounts how local people weathered the bad times:

> My father and uncle were very conservative; had 5th and 6th grade educations. A favorite saying: "Whenever you make money, put some aside, because one of these days you'll have to put it back in if you want to save your business." Again, things got slow. And every time things got slow you had to react -- downsizing. Change your style of living. Don't go on vacation, don't buy that car. Happened a few times. Sold off a couple of boats to survive. Sold one to St. Croix and another to the Venezuelan government. We'd build and work, and if things got slow, we'd sell. It was good for the community because the boats were built here. Having boats is like money in the bank. We've invested in our own stock market [LA-DW-026].

But then the downturn of the 1980's hit Bayou Lafourche. The tug operator recalls the impact:

> In December 1981, things were busy right up to the holiday season. But in January 1982, someone pulled the plug on the bathtub and the water went out. It happened overnight and no one saw it coming. Had seven boats, offshore and inshore, at that time. Sold a big offshore boat in 1981 to Thailand, and that helped us survive. In 83-84, we tied up three of the boats. Had to cancel the insurance; canceled it entirely on boats that were paid for. We expected it to last 6 to 9 months, but it lasted until 1992... All of the boat people here, that survived, did the same thing. We didn't have outside management, so we just went back to doing what had to be done. Other companies did not survive. Some boats were tied up, that are still tied up. A lot of boats built in the 1960's and 1970's were sold. "Fly-by-night" brokers came in and did jobs with other people's equipment and then didn't pay. Bankruptcies were pretty high; I think there were some suicides. I know we had a lot of family problems. Good times create family problems too, people partying and living high. But it caused problems with money just not being there [LA-DW-026].

Now, bankers have identified the survivors, and no longer lend to the "professors, lawyers, and doctors" who got into the boat business when it was good and "never knew what hit them when it flipped" [LA-TM-003].

The experience of another local company -- Edison Choest Offshore -- tells the story of the renewed oil and gas industry in the 1990's. Headquartered in an ultramodern office complex in Galliano -- the glass building on the natural levee of Bayou Lafourche is shaped like a ship's prow -- ECO has grown into the "largest U.S. owner/operator of specialized support vessels for the U.S. offshore industry" (ECO, n.d.). The local family, with a background in shrimping, built its first oil boat in 1970. Its shipyard in Larose -- North American Shipbuilding -- was founded in 1974 and now is equipped to build ECO's deepwater ships, in the 220- to 275-foot range. It survived the slowdown of the 1980's by winning government contracts for submarine surface support and rescue ships and research vessels, and now has 70 boats in the water, with another 40 under construction. It leases space at Port Fourchon for its own seaport, "C-Port," which began operations in early 1997. By building, berthing,

manning, operating, and servicing its own fleet, Edison Choest Offshore is intimately linked -- backwardly -- to the future of Shell, BP, and Texaco's ventures into deepwater oil and gas.

C-Port's covered facility controls prime dock space along the deepened Belle Pass, Port Fourchon's 2-mile link to the gulf. It was conceived as a "pit-stop." William Furlow of *Offshore* magazine surveys the C-Port landscape:

> To minimize the cost in time and dollars of having valuable vessels running up and down the bayou gathering supplies, Edison Choest Offshore developed the C-Port concept. This giant covered dock space includes nine slips 150 ft deep and 68-78 ft wide, built to accommodate supply boats as large as 276 ft in length.
>
> The idea is that in one stop, these huge vessels can simultaneously refuel, take on supplies, load up with mud and completion fluids, pick up equipment needed offshore, and then be on their way. The docks are huge, with enough setback space for an entire boat-load of equipment, which can be placed on the space behind the slip for quick loading. One-hundred ton cranes can move heavy equipment on and off the vessels (July, 1998).

Remarking on C-Port's roof, the operator of a competing terminal at Port Fourchon said he had offered to buy his own guys raincoats [LA-TM-043].

Port Fourchon's narrow link to high ground, Louisiana Highway 1 along the bayou, carries 40,000 trucks a month to supply the renewed offshore activity. The port itself had endeavored to diversify, providing docking facilities for commercial and recreational fisheries, customs inspectors for an anticipated rise in imports after the signing of the North American Free Trade Agreement, modest motel facilities for visitors, and, incongruously set amidst the forest of rigs pulled in for maintenance and inspection, a residential marina with upscale "camps." But Edison Chouest remains resolutely tied to deepwater.

Company officials viewed this, in 1997, as sound strategy. The new activity was attributed primarily to two factors, the improvement in seismic technology which has significantly reduced the geologic uncertainties of exploration, and the incentives for deepwater probes provided by the Outer Continental Shelf Deep Water Royalty Relief Act. And the major companies, with huge deepwater investments, would be in it for the long haul, the 40-year life of producing wells. They would not pack up and run to other parts of the world, as some had done in the 1980's. And they were taking their time, not all starting up at once, with the prospect, for a company whose boats are designed to service this sector, of steady work. Moreover, for a service supplier who also builds boats, there would be no lack of opportunity: the fleet of workboats that had been constructed in the 1970's was now antiquated [LA-TM-039]. There were a few veterans of the 1980's who took a different view: "All this activity will be over in a year," speculated one proprietor at Port Fourchon when interviewed in October 1997 [LA-TM-020].

6.5 The Military Landscape

The Special Projects Committee of the Corpus Christi Chamber of Commerce commissioned and oversaw an extraordinarily comprehensive survey in 1961 of the human, economic, and natural resources of a nine-county area around the city. Prepared by the Bureau of Business Research of the University of Texas, the report sought to assess "the attractiveness of the region for economic development and for the expansion of manufacturing plants already in place" (Ryan, 1961). The report devoted a final chapter -- a single page -- to a review of "Military Activities in the Corpus Christi Area." The chronology is sparse: Corpus Christi Naval Air Station opened in 1941 and trained 30,000 student pilots during the war; satellite fields were established in Beeville and Kingsville; in 1946, these fields were closed; in 1948, the Naval Air Advanced Training Command was moved from Jacksonville, Florida to Corpus Christi, giving that station a "permanent status;" in the 1950's, Beeville's Chase Field and the Kingsville facility were reactivated, though, at the time the report was written, the Secretary of Defense had just announced that auxiliary fields south of Kingsville and at Port Isabel and Alice were to be shut down. The chapter's conclusion encapsulated the unpredictable nature of military activities:

> One of the most discouraging events in the recent history of Corpus Christi was the final closing in mid-1959 of the Navy's Overhaul and Repair Department, where as many as 4,000 civilians had worked, but the reopening of this installation under the auspices of the Army was recently announced. When the base is in full operation, about 3,000 civilians will be employed (Ryan, 1961).

In fact, the Army did arrive shortly and opened the Aeronautical Depot Maintenance Center (now the Corpus Christi Army Depot). Civilian employment exceeded expectations. By the 1970's, combined civilian and military employment in the area was over 13,178, with an annual payroll of $114 million (U.S. Army Corps of Engineers, 1978). Coastal Bend, since World War II, has been a preeminent military landscape.

Historian Bruce Schulman has sketched the larger regional landscape of defense in the South, arguing that the military supplanted New Deal social programs as the primary vehicle for Federal intervention in the region. The post-war South has been the Pentagon's commissary, its bootcamp, and to a lesser degree, its contractor and weapons-supplier. Schulman attributes this both to the region's "traditional patriotism and zest for a strong defense" and to the tenure of its representatives:

> ... the Congressional seniority system granted the South the political power to deliver large defense budgets. In doing so, southern hawks saw to it that their roosts were well-furnished. The postwar growth of the Pentagon and its demands for new goods and services like missiles offered potential bonanzas to southern legislators. They had little to trade but their influence in the Congress and they dealt that influence shrewdly (Schulman, 1991).

Representative Mendel Rivers of Charleston, S.C., was a legend at this during his Cold War-era chairmanship of the House Armed Services Committee. As his predecessor on the committee observed of the bases, hospitals, missile maintenance centers, shipyards, and defense-related factories around Charleston, "you put anything else down there in your district, Mendel, it's gonna sink" (Schulman, 1991).

6.5.1 From Brookley Field to BRAC

Indeed, the Pentagon's conundrum since the mid-1980's is how to demilitarize the landscape of the South and the rest of the country, how to close some of the 4,000 separate installations, many of World War II vintage, maintained in the United States (Stubbing, 1986). Until 1977, the closure process was by executive-branch choice, exemplified by the Department of Defense decision to close the Mobile Materiél Area at Brookley Air Force Base, deemed to be obsolescent, in 1964 (Lynch, 1970). It was only one of some 200 bases declared unneeded by Secretary McNamara in the 1960's. In the 1970's some 400 installations were closed as the Vietnam conflict scaled down (Stubbing, 1986; Twight, 1990), but by 1976 Congress had had enough and passed legislation requiring congressional hearings on proposed closures, NEPA studies of the impact of individual base closures, and gave itself veto power over the appropriation of funds for closures or realignments. Between 1977 and 1985, no major facilities were shut down. One reporter surveyed the climate: "Any congressman who can't muster the clout to hang onto a hometown base might as well retire to a city council seat" (Stubbing, 1986).

However, the massive Federal deficit of the 1980's propelled Congress to reconsider its resistance to closures. In 1988, under the prodding of Representative Dick Armey and Senator Phil Gramm, both of Texas, it passed the Base Closure and Realignment Act (P.L. 100-526). Authority was given to the Secretary of Defense to act directly on recommendations from the independent Commission on Base Realignment and Closure (BRAC). The BRAC commission recommended 451 closures or realignments in 4 rounds between 1988 and 1995, 85 percent of which the Department of Defense had acted upon by 1998 (U.S. GAO, 1998).

In the process, Coastal Bend found itself with a new installation on Corpus Christi Bay -- Naval Station Ingleside.

6.5.2 "Navy Strong and Texas Proud:" Coastal Bend's Homeport

The seeds of the homeport idea were planted with the "revolt of the Navy" against President Jimmy Carter and his Secretary of Defense, Harold Brown, in 1978. Carter's defense budget request for FY 1979 struck at each of the armed services. The Army would have to cancel production on its Bradley armored personnel carrier. The Air Force would not be able to acquire the F-111 strategic bomber and would see its MX missile development curtailed. The Navy, however, felt it took the hardest hit from the President, himself an Annapolis

graduate and former Naval officer. Carter deleted funding for a nuclear cruiser and a conventional carrier and halted procurement of the submarine-launched cruise missile (Stubbing, 1986).

All three branches immediately approached Congress' Armed Services Committees. For the Army and the Air Force, these end-runs around the Administration achieved some success. Congress restored the Bradley and the bomber. And, in its final budget to the President, Congress added $2.1 billion for a nuclear aircraft carrier.

Carriers, nuclear or conventional, were integral to the Navy's chief goal of building the "600-ship" Navy. As the former chief of the National Security Division of OMB recounts,

> This goal had become a rallying cry to the Navy and its supporters, who had seen the active fleet dwindle from over 900 in the late 1960's to 484 in 1976 as older World War II ships were retired. The 600-ship goal came to be viewed as mandatory to the national security, despite the fact that the types of ships and the strategies for their use -- far more critical to military effectiveness -- were largely undefined (Stubbing, 1986).

Carter rejected the FY78 defense authorization bill because of the Navy's carrier add-on. However, in an effort to win allies in Congress, he signed the defense bill the following year with the carrier funds tacked on again. At the time, Carter was in a desperate struggle with Congress over the SALT II treaty he had negotiated and signed with Soviet Premier Brezhnev. Nonetheless, the treaty was never brought to a vote in the Senate, for a set of circumstances in 1979 which would soon play to the Navy's favor in the administration of Ronald Reagan. In August, the news of a new Soviet "combat brigade" in Cuba broke, though the troops actually were in compliance with the 1962 Kennedy-Khrushchev agreement. Negative publicity and the White House overreaction heightened national unease. The takeover by Iranian students of the American Embassy in Tehran in early November diverted attention from SALT II and raised the question of U.S. prestige throughout the world. Finally, the Soviet invasion of Afghanistan in December dealt a death blow to SALT II (Stubbing, 1986).

Throughout the presidential campaign of 1980, Reagan proclaimed national defense as his number-one priority and, 10 days into his new administration, Secretary of Defense Casper Wienberger, Senator John Tower of the Armed Services Committee, and Budget Director David Stockman cut a deal to highlight this priority. They agreed to a $32 billion add-on for the next defense budget. The windfall caught Pentagon officials by surprise. Richard Stubbing quotes one Navy budget officer:

> "It was kind of a unique situation. I was working for the Navy, and there was a numbers drill that said if you had half a billion or a billion more, what would you do with it? And my stuff was only five billion total. We put in a minesweeper that had

> been on the books for years, for example. Definitely there was a need for a new class of minesweeper, but this design was kicking around for ten years and we just pulled it off the shelf. Suddenly money was available. There are cheaper designs that could have been looked at, but they just dusted off the old plans. Under Carter's zero-based budgeting, they had priority bands -- band one, band two, band three. There was a lot of crap from band five and six that got funded" (Stubbing, 1986).

In this funding climate, the new Navy Secretary, John Lehman, quickly sought the authorization for the "600-ship Navy" and the facilities needed to berth those vessels. The "strategic homeporting program" was initiated by the service in 1982 and funded in 1986. To accommodate the fleet buildup and relieve overcrowding at existing installations, the Navy had selected nine sites for new naval bases by 1985, centered around five "battlegroups," each with a "capital ship." A GAO report summarizes the ambitious plan to service 63 ships:

> The plan originally included (1) a battleship surface action group in the northeast at Staten Island, New York; (2) a carrier battlegroup in the northwest at Everett, Washington; (3) a battleship surface action group on the Gulf Coast at Ingleside, Texas and Galveston, Texas; (4) a carrier battlegroup on the Gulf Coast at Pensacola, Florida; Mobile, Alabama; and Pascagoula, Mississippi; and (5) a battleship surface action group on the West Coast at San Francisco; Long Beach, California; and Pearl Harbor, Hawaii. Homeports at Key West, Florida; Lake Charles, Louisiana; and Gulfport, Mississippi, were designated to receive some miscellaneous support ships (U.S. GAO, 1991).

A decade after the plan was launched, the Soviet Union had dissolved, the 600-ship fleet had been trimmed to 450, and the Navy had deleted the Pensacola-area battlegroup from the program in response to GAO criticisms, although not before the support base on the Theodore Ship Channel in Mobile Bay had been substantially built. The Commission on Base Realignment and Closure had closed Galveston and Lake Charles. The Department of Defense, however, "did not concur" with the GAO's recommendation to Congress in 1991 to terminate the program. But the recommendation caused consternation on Texas' Coastal Bend, where its own homeport, Naval Station Ingleside, was under construction. (See Box 6.2.)

Naval Station Ingleside, "NAVSTA" in Navy officialdom and local talk, survived successive threats of closure even though -- virtually from groundbreaking to dedication -- it was a base in desperate search of a mission. Authorized in 1982 to homeport part of John Lehman's aborted, decommissioned, and mothballed "600-ship Navy," NAVSTA found new life as the "Mine Warfare Center of Excellence," now berthing a fleet of 25 vessels, centered around the USS *Inchon*, the "mine countermeasure command, control and support ship."

The U.S. Navy's unfortunate experiences in the Persian Gulf War heightened attention to mine warfare. Military historian Robert Love recounts several incidents in 1991. On the

morning of February 18th, the 18,000-ton helicopter carrier *Tripoli*, flagship of the mine-clearing task group, was operating in a shipping channel that was supposed to have been cleared of mines. The ship was operating her six minehunting helicopters to sweep an adjacent minefield known to consist of three rows of mines. There was no minesweeping craft ahead of the *Tripoli* to protect her. At 4 am, the *Tripoli* hit a 300-pound moored contact mine. The explosion ripped a 20-foot hole in her hull below the waterline and left the vessel dead in the water. Helicopter mine sweeping in the area was stopped indefinitely, and the *Tripoli* was towed to Bahrain (Love, 1992).

That same morning, another incident occurred 50 miles off the coast of Kuwait. Captain Edward Hontz was warning his crew on the cruiser *Princeton* of the *Tripoli*'s misfortune when his own ship triggered two mines and was towed to the port of Dubai for major repairs. Admiral Arthur acknowledged: "We can do our piece of the minesweeping business a lot better than we have" (Love, 1992).

It is not coincidental, then, that Ingleside's Homeport finally found its mission in the spring of 1991. The General Accounting Office, again, was quick to attack the Navy's plan to consolidate mine warfare forces and ships on the Coastal Bend. Its critique of the plan in December 1991, occasioned a further study by the Center for Naval Analysis (CNA), an independent review by the National Academy of Sciences, a renewed justification by the Secretary of the Navy, and a second response by the GAO in 1993. The GAO reported its findings:

> The Secretary of the Navy's report does not justify locating the forces at Ingleside. The CNA study estimates that moving to Ingleside is one of the costliest alternatives. The Secretary's report neither adequately challenges that estimation, nor addresses the fundamental need for mine warfare forces to train with the fleets they are to protect -- a difficult task if Ingleside is selected. A draft National Academy of Sciences study directed by the Senate Committee on Armed Services noted that mine warfare forces need to be located with the fleets on both coasts... The Secretary's report stated that differences in cost are secondary in importance and cited a "highly desirable combination of considerations" to justify choosing Ingleside; however, most of these appear insignificant, unverifiable, or achievable at alternative sites. In fact, the Navy's failure to support its decision with compelling evidence that can override the cost factor and the fleet training issue suggests that Ingleside is not the best alternative (U.S. GAO, 1993).

By then, however, Naval Station Ingleside was ready to berth its first minesweepers.

Back in 1985, excitement was high when the announcement came that Ingleside was the choice to homeport the 42-year old *USS Wisconsin* and the carrier *Lexington*. The Port of Corpus Christi's promotional guide for 1985-1986 captured some of this expectation:

> Even now, months after the Homeport award was celebrated, the excitement hasn't waned. Hundreds of cars proudly bear the Homeport bumper sticker, walls and windows all over town are graced by the attractive Homeport poster, and politicians and business experts are still eagerly calculating and recalculating the boost this means for the Coastal Bend. Even this year's Bayfest dedicated its festivities to an elaborate welcome to the Navy, complete with fireworks and marching bands. And last, but not least, State and local employment offices have been flooded with calls from enthusiastic would-be laborers, who must be gently reminded to be patient: after all, construction still won't begin for almost two years (Port of Corpus Christi, 1985-1986).

The port's guide speculated on what clinched the deal for Ingleside:

> Some say it was the 45-foot deep channel that did it; others say it was Corpus Christi's 45-year friendship with the Navy; still others say it was local enthusiasm, evidenced by a $25 million bond issue... (Port of Corpus Christi, 1985-1986).

The bond issue, requested by the Corpus Christi Port Authority and passed by Nueces County voters, purchased a 480-site across the bay in San Patricio County. San Patricio County had struggled to find legal means to sweeten the pot, but State law prevented the county from issuing bonds for anything other than water and sewer improvements, flood control and right-of-way acquisitions. It looked briefly at an idea to have its Navigation District issue a $5 million bond (Ingleside *Index,* March 6, 1985), but apparently the State's contribution of an additional $25 million in June 1985, was sufficient to shore up Homeport's location at Ingleside.

Ingleside's primary local competition came from Harbor Island near Aransas Pass. Brown and Root had recently mothballed the massive fabrication yard it had established on the island in 1975. The Houston-based engineering and construction firm, builders of the platform for Kerr-McGee's 1947 well in offshore waters, was in search for a yard capable of building large rigs following the 1974 leasing of 42 deepwater tracts. Its existing facility at Greens Bayou on the Houston Ship Channel could not handle the job. Harbor Island was selected for its open access to the gulf, reasonable distance from the main yard in Greens Bayou via the ICW barge canal, and its protection from heavy waves by Mustang Island. Brown and Root purchased a 300-acre site on the island in 1975 and opened its yard the following year. The company history described the operation:

> Employing 500 skilled workers by 1980, the yard was equipped with 20 cranes... It was prepared to load out the largest imaginable structures with two 600-foot skids, one 900-foot skid, and one 1,400-foot skid. To handle single-section jackets up to 1,000 feet in length that would emerge from the yard, Brown and Root developed the world's largest launch barge... *Brownbuilt* magazine described Harbor Island as a

> place "where giants lie in the sun fanned by gentle Gulf breezes while they await the day they can stand on their own and go to work" (Pratt et al., 1997).

The first giant was the 708-foot steel jacket for Chevron's Garden Banks development 140 miles off Cameron, La. Shortly, it teamed with McDermott to install two of Union's platforms in 950-foot waters, and won a fabrication and installation contract from Exxon in 1981 for the 1,000-foot guyed tower for the Lena prospect in Mississippi Canyon. With this successful project, Brown and Root positioned itself to build for the expected deepwater frenzy started by the areawide lease sales of 1983. But oil prices had stopped rising by 1982, plunged to $10 a barrel in 1985, and contracts evaporated. As the company's historians recount,

> Marine construction at Brown and Root suffered under the contraction. The fabrication yard at Harbor Island idled away its potential. "With the exception of the guyed tower," said Jay Weilder, "nothing else was ever built, or very little was built, that yard was intended for. So, we geared up for this wonderful market that never really appeared and never sustained anyone in our end of the business..." The deepwater era ended abruptly, and with it, Brown and Root's commitment to the next generation of deepwater technology (Pratt et al., 1997).

A naval homeport on Harbor Island might have prolonged that area's industrial tradition. But the site was quickly dropped from consideration: it lay on the only route from Mustang Island, and would itself have been difficult to evacuate in storms. Another site, at the existing Naval Air Station on Corpus Christi's side of the bay but off the ship channel, was likewise deleted from consideration after environmentalists protested the need for dredging a deep channel [TX-TM-004].

There was some local concern over the Ingleside site for Homeport. One commentator on the Navy's environmental impact statement endeavored to suggest that Ingleside residents were less than enthused:

> Many of us do not favor trading the quiet, peaceful lives we enjoy for new jobs and industry. We choose Ingleside over Corpus Christi because Ingleside is a small town with good schools and good neighbors. Home port would destroy our quiet town and devastate our fine schools. Most Ingleside residents (non-businessmen) I have spoken with regarding Homeport have indicated that they have no desire to see the Navy locate here (U.S. Department of the Navy, 1987).

Another raised more specific concerns about inflated property values, the need for additional policemen to handle the "young single men" to be stationed at the base, and the potential threat posed by a nuclear fleet:

> ...as information becomes available to children about what Homeport represents in environmental threat, including a significant "Ground Zero" -- nuclear target in this area -- who will have answers for children which can still their fears? (U.S. Department of the Navy, 1987)

But a contractor from Aransas Pass expressed perhaps the more prevalent sentiments of Coastal Bend:

> The Homeport Facility is needed in our area at the present time to help relieve our unemployment in an area that is depressed by the declining oil industry, to aid in our fight against the increased drug trafficking trade coming through the Gulf of Mexico, to strengthen our military defense in this particular area in the United States at a time when the South American countries are facing massive unrest and an ever increasing influence of communist insurgence (U.S. Department of the Navy, 1987).

Moreover, the writer pointed out,

> The Navy personnel can add strength and character to our community through the contact of people who have traveled and lived in other parts of the world and implementation of new thoughts and ideas into the area (U.S. Department of the Navy, 1987).

The feelings of the third commentator would eventually be reflected in Naval Station Ingleside's motto: "Navy Strong and Texas Proud." But there was some truth to the fears of the second writer, at least those over real estate. Speculators did arrive in the area in anticipation of a residential and commercial boom which, by 1998, had yet to materialize. One Houston developer proposed a $28 million project to include a motel, a 400-unit apartment complex, a shopping center, and a 95,000 square foot office building. A Corpus Christi builder announced plans in 1985 for a $100 million "Downtown Ingleside" project of multifamily housing, two lakes, an auto dealership, medical facility, motel, bank, truck stop, and 275,000 square feet of retail space. Few of these plans were implemented in the 1980's. By 1992, Ingleside's city manager observed that a new proposal for 800 apartments, a two-story shopping mall, an amusement center, motel and office space was "only the start of an expected torrent of commercial, residential and recreational growth in his city" (Corpus Christi *Caller-Times*, April 23, 1992). Local observers were still anticipating that torrent in 1998, once sufficient "roofs" -- housing units -- were constructed to attract the businesses [TX-TM-003].

A number of reasons were offered for the tardy takeoff of Ingleside. First and foremost was BRAC. Homeport went through a number of reviews during planning, construction, and berthing, and it was only after the 1995 scrutiny that people felt enough confidence to begin investing in local housing development. Second, as the base's mission changed from a carrier/battleship complement to a mine warfare center, military personnel requirements --

and potential renters and buyers -- were reduced from 4,800 to 3,000. Third, with the closure of the Beeville air base within commuting distance of Ingleside and reductions in other facilities in Nueces County, civilian personnel with civil service status were given priority for new jobs at the Homeport. The base now employs about 150 such workers, primarily for base security, not the 400 or so that were originally anticipated. And, with the depressed oil and gas industry of the 1980's and its layoffs -- the Brown and Root story noted above -- there was no shortage of available housing. Finally, Coastal Bend's extensive road network, a legacy of its vulnerability to hurricanes as well as the "farm-to-market" construction program to service agriculture, facilitates commuting. A commander at the naval station summed up some of the impact on Ingleside and the surrounding area:

> I grew up in the Navy. This is different from any base. Usually, a mile out there are strip joints and tattoo parlors. Here, guys go downtown some, to the fast food places and HEB [grocery store]. There is nothing else. The guys go over to Corpus to "find women with teeth." That's why we are trying to build something on the base to keep them from drinking and driving... Any place else would have strip malls on the corner across from the base. People here are so spread apart. There is only NuWay on the corner, and I don't stop there. I have never seen people that love to drive so much... A lot of officers, but not a lot of enlisted men, live in Portland. People go where they can find a house. There is a lot of building in Ingleside, but they are houses. Young sailors don't want to buy a house. My lieutenant lives in Ingleside. I rent a place in Portland. It was about 60:40 when I first got here [60 living locally, 40 not]. It is 65:35 or 70:30 now. More people are moving on this side of the bay, as housing becomes available...[TX-DA-048].

Ingleside city officials took the initiative to prohibit the strip joints typical of military installations. And the armed services attempts to promote local economies by privatizing and outsourcing. Indeed, NAVSTA was to be a new model for military facilities, without on-base housing, without a commissary, without the self-sufficiency of most bases. A supply contractor for Naval Station Ingleside commented on the outsourcing policy and its implications for workers:

> There was a Commercial Activities Study done. It took a look at function and whether you should bid in-house or contract. Usually there is an initial savings if you go outside. I think we could do it in-house again, but nobody would give me permission to hire 150 civil service personnel... They are trying to get the Navy civil service out of paying for health care, medical plans, retirement plans. The contractor can decide if he wants that. There are only a couple of options with our contractor. He pays people to be in a plan, but they have to find it on their own [TX-DA-048].

While Ingleside has yet to experience the anticipated residential and commercial boost, local shipyards have benefitted from government outsourcing of maintenance functions. In 1992, Peterson Builders, Inc (PBI) announced that it would build a new shipyard on Jewel Fulton

Channel to handle repair work on the mine countermeasure ships it was building for Naval Station Ingleside in its Sturgeon Bay, Wisconsin yard. The announcement was greeted with delight by the local business community. PBI promised to hire 140 people locally, once the Army Corps of Engineers deepened the channel. A local banker saw this as the "shot in the arm" Ingleside needed to stimulate development, after a period of uncertainty. The city manager concurred:

> ... he hopes the shipyard will be the first of many companies moving in because of the Navy presence. He looks forward to this bringing new people to live and shop here, among other things helping Ingleside reduce the debt incurred in preparations for arrival of the Navy (Ingleside *Index*, October 22, 1992).

6.5.3 Conclusions

The illogic which the GAO accountants noted -- of locating the minesweepers on the gulf while the fleets they are supposed to shield are berthed on the East and West coasts -- may draw the attention of future BRAC commissioners. Cyberspace may perpetuate Naval Station Ingleside, however. At least some training exercises with the fleets off the other coasts can now be done through simulation [TX-TM-020, an *Osprey* sailor].

Box 6.2 A Chronology of Uncertainty

The Corpus Christi Caller-Times detailed a decade of maneuvering over Homeport in a 1993 report [undated]. These are the key events and the crucial actors:

■ 1982

Fall: Navy Secretary John Lehman, in an interview with the Associated press, mentions Corpus Christi as a city that could become a homeport.

■ 1983

Sept. 22: Rep. Solomon, D-Corpus Christi, meets with congressmen and Lehman about Homeport possibility.

■ 1984

Aug. 28: Chamber of Commerce receives request from Navy for Homeport proposal.

Nov. 14: Navy team visiting Corpus Christi narrows possible Homeport sites, including Ingleside Point.

1985

Jan. 4: Corpus Christi and 16 other Gulf Coast cities submit proposals to the Navy for Homeport.

Feb. 21: Sen. Phil Gramm, R-Texas, announces that Corpus Christi is one of six finalists.

April 4: Texas House passes $21 million trust fund for Homeport.

April 6: Nueces County voters approve $25 million Homeport bond issue by a 3-1 margin.

May 1: Legislature authorizes $25 million trust fund for Homeport.

July 2: Coastal Bend gets Homeport -- five ships including the battleship USS Wisconsin and the aircraft carrier USS Lexington were to be assigned.

1986

Feb. 13: General Accounting Office report criticizes Navy's entire homeporting plan.

May 20: U.S. Senate Armed Services Committee rejects proposal to approve Navy's homeporting plan, but reverses itself 2 weeks later.

Aug. 6: Senate votes to fund Homeport.

1987

Jan. 5: Navy asks Congress for $38.8 million for Homeport.

Sept. 3: State commits $12.3 million for roadway projects near Naval Station Ingleside.

Oct. 28: $38.8 million funding for Homeport passes U.S. Senate.

Dec. 22: President Reagan signs spending bill into law, approving $38.8 million for the first phase of construction for Homeport.

1988

Feb. 20: Groundbreaking for Homeport.

■ 1989

April 18: House votes to close 86 military bases, with ships from homeports Galveston and Lake Charles, La., to be transferred to Naval Station Ingleside, raising to ten the number of ships to be ported there.

Sept. 15: Senate approves Homeport funding of $22 million in construction, as House had done in August.

■ 1990

Jan 24: Navy puts a hold on new construction that blocked nearly $20 million in shore facilities work at the Ingleside site.

April 24: Navy list of bases being considered for closure includes Naval Station Ingleside.

June 14: Six pending construction projects spared from a list of projects scheduled for cancellation, but moratorium on new construction extended to Nov. 15.

Aug. 29: Navy announces that the training aircraft carrier USS Lexington will be decommissioned in 1991 and replaced by the USS Forrestal.

Sept. 29: $48.3 million wharf and pier facility opens with ceremony.

Oct. 11: Homeport Steering Council initiates an economic diversification study for the county in light of uncertainty surrounding Naval Station Ingleside.

Nov. 5: Capt. Michael J. Marchetti takes command of Naval Station Ingleside.

Nov. 8: General Accounting Office recommends mothballing Wisconsin unless it proves its merit in the Middle East.

■ 1991

Jan. 17: Battleship USS Wisconsin's missiles among first shots in Persian Gulf War.

Feb. 4: Bush administration recommends that the Navy mothball its last two battleships, including the USS Wisconsin.

April 3: General Accounting Office recommends killing six new homeports, including Naval Station Ingleside.

April 12: Homeport is spared when the Pentagon discloses its list of bases to be closed.

April 16: Navy Secretary H. Lawrence Garrett says that Naval Station Ingleside may become the homeport of a reserve Knox class frigate.

May 3: The Navy announces plans to station a mine-hunting fleet at Homeport, including 14 Avenger-class minesweepers, 8 Osprey-class mine hunters and 3 Knox-class frigates.

May 7: A U.S. House subcommittee votes to proceed with $22 million worth of construction at Homeport, which had been on hold due to a Defense Department moratorium.

May 31: Naval Station Ingleside is one of 36 installations on a new list to be considered for closure by the Pentagon.

June 7: The base closure commission votes 6-1 to remove Homeport from the list of possible closures.

July 31: About 40 representatives of Navy commands from across the nation meet at Naval Station Ingleside to discuss how the base will operate as a center for mine warfare.

Sept. 12: The Navy announces approval of $21.3 million in projects to finish most construction at Naval Station Ingleside.

Dec. 13: The Navy announces that the first of nine ships to be based at Homeport will arrive in June 1992.

Dec. 14: According to a Caller-Times report, the Navy is considering moving two airborne squadrons -- including more than a thousand personnel -- to the Coastal Bend to join mine warfare operations at Naval Station Ingleside.

■ 1992

Jan. 9: Vice Adm. John H. Fetterman, chief of naval education and training, urges that development begin in Ingleside in anticipation of the arrival of the base's contingent of ships in the summer.

March 10: The Navy announces that the USS McCandless, a naval reserve frigate, will be transferred from Norfolk, Va., to Ingleside in October. The vessel becomes the 11th ship out of an expected 25 to be assigned to Homeport.

March 17: A Navy plan on mine warfare supports consolidating mine-warfare operations and training at Naval Station Ingleside.

March 18: Residential development starts in Ingleside for the first time in a decade in anticipation of an influx of military personnel and their families.

March 20: The USS Pioneer, a newly constructed mine warfare ship, becomes the 12th ship assigned to Naval Station Ingleside.

April 27: The Navy announces the assignment of 271 personnel to Naval Station Ingleside to begin maintaining the base's first vessels, scheduled to arrive in June.

June 25: The USS Scout arrives at Naval Station Ingleside.

June 30: The USS Truett becomes the first frigate to be homeported at the base.

July 6: Naval Station Ingleside is officially dedicated.

Aug. 18: According to a Caller-Times report, the Navy's Atlantic fleet will transfer to Naval Station Ingleside on Oct. 1 from Charleston, S.C.

Aug. 24: The USS Sentry arrives a day earlier than planned to avoid Hurricane Andrew.

Oct. 9: A Congressional defense spending bill blocks the transfer of new operations to Naval Station Ingleside until at least February 1993.

Nov. 13: Two minesweepers, the USS Devastator and USS Defender, arrive.

Dec. 7: The USS Pioneer becomes the second U.S. Navy vessel to be commissioned in Texas since World War II.

Dec. 11: A $2 million medical-dental clinic opens to serve as an outpatient facility for base personnel and their families.

■ 1993

Jan. 15: A Navy report indicates that all mine-warfare operations will be consolidated at the base, including the Mine Warfare Command Headquarters in Charleston, S.C., and two helicopter squadrons based in California and Virginia.

Feb. 16: The USS Defender, USS Sentry, USS Devastator and USS Scout depart to participate in a multinational mine countermeasures exercise in European waters. The GAO says consolidating Navy mine warfare units in Ingleside is unjustified.

March 9: A South Texas Joint Military Facilities Task Force delegation meets with congressional and military leaders in Washington to keep area bases open.

May 1: South Carolina officials plead their case to keep Charleston naval facilities before the Federal base-closure commission. They urge the commission, which was conducting a regional hearing, to add the bases in Ingleside and Pascagoula, Miss., to the closure list.

May 21: The Defense Base Closure and Realignment Commission votes unanimously to place Naval Station Ingleside and Naval Air Station Corpus Christi on the review-for-closure list.

June 6: Members of the base-closure commission attend a regional review hearing here. Local leaders are disappointed when questions from the commission cut into time for their presentations.

June 25: Base-closure commission, in a unanimous vote, removes Naval Station Ingleside from the list for consideration for closure.

------end of Box 6.2

6.6 The Leisure Landscape

In their discussion of "Crude, Coppertone and the Coast," Robert Gramling and William Freudenburg trace the evolving recreational landscape of the Gulf of Mexico in the twentieth century:

> Leisure began to be recognized not only as a luxury, but by many as a necessity and right. Led by Henry Ford, who realistically saw the relationship between leisure and consumption, the 5-day work week became common. In a parallel fashion, hours worked per week began to fall approximately 4 hours per decade, from 70 in 1890 to 37 in 1960. Coupled with the institutionalization of the vacation and earlier retirement ages, which came later in the century, these trends led to increased leisure time... They were reinforced by a third factor: the steady rise in family disposable incomes following World War II, continuing with minor fluctuations until the early 1970's. This phenomenon made it possible for increasing numbers of families to afford vacation in the growing leisure time becoming available (Gramling and Freudenburg, 1996).

Many of these families headed to the beach. Gramling and Freudenburg attribute this to changing womens' fashions following World War I: "an accent on the youthful look, the display of more of the body, and the blurring of the distinctions between the ways in which women of different social classes dressed" (1996).

Congruently, the suntan lost its stigma as the mark of the working class:

> As the display of more and more skin became socially acceptable, the suntan became a status symbol (particularly when displayed in northern climes in the winter, indicating a trip to warmer environs). Going to the beach emerged as a major social activity, and "working" on one's tan became a way to demonstrate conspicuous leisure, even for the middle class. As a result, an entire industry emerged, built around coastal/beach tourism. Not only did the cult of beach activities make it possible for millions to lie happily under the sun cultivating carcinomas, but, more and more, local and national norms allowed them to do it over increasing portions of their bodies (Gramling and Freudenburg, 1996).

With the increasing use of automobiles after World War II and the spread of the interstate highway system during the Eisenhower administration, the sandy beaches and the barrier islands of the Gulf of Mexico began to fill with vacationers and the services to cater to them. Here we examine the leisure landscape of Gulf Shores, Ala., somewhat of a newcomer whose major growth spurt came in the wake of Hurricane Frederic in 1979. An earlier hurricane, the "Great October Storm of 1893," devastated the fishing settlement of Cheniere Caminada on the marshlands of Lafourche Parish in Louisiana, and that story provides a temporal and spatial counterpoint to the later success of the Alabama coastline.

6.6.1 Cheniere Caminada, Grand Isle, and the Hurricane of 1893

The storm made landfall the night of October 1 at Cheniere Caminada, a narrow ridge of firm ground on the edge of the marsh. All but four houses were destroyed, half the community's 1,400 residents died, and the survivors moved up Bayou Lafourche to more secure locations -- Leeville, Cut Off, and other communities on the line settlement along the bayou's natural levees. Some came back to the cheniere, but the resettlement effort was curtailed by another hurricane in 1915 (Davis, 1993).

The 1893 hurricane left 2,000 dead along its path through Louisiana, Mississippi, and Alabama, but did relatively minor damage to the fledgling resort settlement on Grand Isle, a barrier island separated from Cheniere Caminada by only a mile. Beachfront structures and the two hotels -- including the grand Ocean View and its 60 changing cabins on the beach -- were leveled, but only 12 resort workers lost their lives (Meyer-Arendt 1985:457). By the 1890's, Grand Isle had emerged as a popular summer resort for New Orleans aristocracy, seeking seaside relief from the city's heat. Grand Isle's hotels reopened shortly after the storm, only to be destroyed again in the 1915 hurricane.

Following World War II Grand Isle experienced a revival. Real estate developers had acquired property of many local residents during the Depression, and these were developed as lodging, summer homes, and fish camps in the 1950's. Concerted efforts were made by the State of Louisiana to arrest the perennial problem of beach erosion, some 100 feet per year on

the western end of the island, but these proved largely ineffective. By 1960, according to geographer Klaus Meyer-Arendt, Grand Isle had lost its appeal as a resort:

> This is attributed to the increasingly ramshackle appearance of recreational housing on the island, accelerated beachfront deterioration resulting from both storm passages and futile efforts at shoreline stabilization, and quicker access to the more attractive beaches of Mississippi, Alabama, and the Florida panhandle, especially for New Orleans- and Baton Rouge-based recreationists (1985).

Hurricane Betsy in 1965, making landfall on Grand Isle, proved to be a brief stimulus for the resort as insurance pay-offs and low-interest loans encouraged new summer home and motel construction. But, as Meyer-Arendt observes, the anticipated post-storm upgrading of land use was partial. Many mobile homes brought in as temporary relief shelters became permanent fixtures. Absence of zoning regulations encouraged a motley variety of summer homes, "from primitive to fancy" (1985).

A support base for offshore oil activities was also established on the back bay, with Exxon and Conoco as major tenants. But lack of an adequate supply of fresh water -- Grand Isle is supplied by an 80-mile pipe from Raceland -- has limited the attractiveness of the site. The establishment of a State park on the island in the 1970's started another spurt in Grand Isle's tourist activity, but by the 1990's town officials were still acknowledging the need to upgrade the community's image [LA-TM-017]. They are still battling beach erosion, with the assistance of the Army Corps of Engineers. After an embarrassing episode at sand replenishment -- the new beach had already washed away by the ceremonial ribbon-cutting [LA-TM-017] -- the Corps is changing its approach: utilizing rock.

6.6.2 Gulf Shores and the Alabama Coast

The impact of Federal policy and regulations on the Gulf Coast region is especially evident in the historical development of Gulf Shores. From the construction of the Intracoastal Waterway in the 1930's to banking regulations in the 1980's, Gulf Shores has ridden a wave of government subventions to attain its status as an upscale resort. But, like any wave, there have been crashes along the way. And Federal regulations, especially those related to coastal environments, may yet undo some of the developmental successes (and excesses) facilitated by earlier Federal policies.

Thirty miles of "sugar-white" sandy beaches mark Baldwin County's Gulf Coast, stretching from the Florida/Alabama line to the Fort Morgan Peninsula. On the eastern end of this stretch, the City of Orange Beach presents a seashore skyline of 14-story condominium complexes, the protected sport-fishing harbor of Perdido Bay, and the upscale, gated retirement enclave of Ono Island. Orange Beach, a community of 2,250 permanent residents, merges into the City of Gulf Shores to the west, with its 3,200 permanent residents. From Gulf Shores, the road extends another 15 miles along Bon Secour Bay to Fort Morgan,

connected by car ferry to Dauphin Island across the mouth of Mobile Bay, then by bridge over the Intracoastal Waterway to south Mobile County.

The self-styled "Redneck Riviera" swells to 60,000 residents and upwards of 200,000 weekend visitors in the summer tourist season, a bustling seascape with traffic backed up on Highway 59 -- currently the sole evacuation route -- all the way to Foley, past strip malls with packed parking lots, large supermarkets with busy check-out lines. Aggressive marketing, the development of "season extenders" such as the National Shrimp Festival in October, and the construction of Interstate Highway 65 into the midwestern heartland, have prolonged the leisure season from March to November, but "coppertone and the coast" remain the enduring attraction.

In the 1940's and 1950's Gulf Shores only came alive in the summers, when a cohort of loyal vacationers from different parts of Alabama would return, year after year, to occupy scattered small residences along the beach -- their own or relatives' summer homes -- or one of a couple of existing motels. Several small stores served the summer visitors, and once the summer was over, the town virtually closed down. The few permanent residents of the area -- 120 when the town incorporated in 1956 -- lived primarily around Little Lagoon behind the dunes, carried out some fishing, and lived off real estate and tourist income.

6.6.2.1 Development

In the early 1900's, large tracts of land were opened up for homesteading in the Fort Morgan and Gulf Shores areas; much of this was claimed by squatters or visitors who simply had to put together enough money to pay for the title registration and taxes and to demonstrate use of the land, either by building a house and living in it for a specified amount of time or cultivating parts of it.

This was the door through which George Meyer, of a German wheat-farming family from New Prague, Minnesota, credited with being the founder of the city, entered. Meyer, on a journey to Brazil in a quest for land, made a stop in the New Orleans area where he met Carl "Zeke" Martin from Mobile who was in the oil business, buying up leases on the Gulf Coast. Meyer began working for him, taking care of the legal aspects of lease purchasing. It was from this base that Meyer visited and fell in love with the beaches south of Foley that he then invested in, settled into and nurtured into the town of Gulf Shores. The land was at that time still a desolate stretch of marshland: "...Zeke (Carl Martin) claimed 1,000 beachfront acres of biting flies and a lagoon of alligators" (Bonkemeyer, 1984).

Meyer reportedly gave the place its name and was responsible for laying much of the ground for its development into a community and a town. His wife, Erie Meyer, recounting the early history of Gulf Shores in an interview in 1985, described Meyer as "an adventurer and entrepreneur" who visited the area and fell in love with it.

> There was no way you could get to the Gulf at that time without going by boat. And George asked Mr. Mack Shelby who was one of the fishermen: "Would you carry me across the Gulf there? I'll pay you." So he carried him and George said when he looked at that beautiful stretch of land, that white beach, he said "I couldn't believe my eyes. And I said 'Mr. Shelby, who owns this land?'" Mr. Shelby laughed and said, "Who would want it? Nobody wants it. The State owns a lot of it. Some big estates in Chicago own a lot. I don't know who else owns it." George said "Well, in the morning, Mr. Shelby, I'm going to be in Montgomery, and I'm going to file a homestead claim on a hundred and sixty acres. Now if you'll pick out a hundred and sixty for yourself, I'll file for you." Mr. Shelby said, "Mr. Meyer, I don't want it. Why pay taxes on something that you can't grow anything on? [George] said "Well. I don't want to grow anything on it. I want people to enjoy it." And later on, during the first years when I was down here, so many of the people couldn't believe a grown man would be foolish enough to waste his time and money -- cause it was hard -- it was hard to develop a piece of land that nothing would grow on" (Harrison, 1986).

Much of the history of Gulf Shores is rooted in the efforts of large landowners to build a community around them. Real estate dealings became a mechanism of this community development. Meyer, who by various means came to hold about 10,000 acres of land, was at the forefront of efforts to attract residents to the area through grants of land for various community projects. Meyer began building bridges and roads across the lagoon and swamps to the gulf and lobbying with the State legislature for the kinds of services that would attract visitors.

One philanthropic and self-interested transaction was Meyer's gift and sale of 4,500 acres to the State to establish a park in exchange for assistance in road construction along the expanse of sand. In the late 1930's, workers with the Civilian Conservation Corps built cabins, buildings, roads, and a casino on the beach, and the park opened in 1939 (Bonkemeyer, 1984). Later, in the early 1970's, the State issued a $43 million bond to develop destination resorts in economically depressed areas, and Gulf Shore's park expanded to include recreation vehicle facilities, a convention hotel, and an 18-hole golf course. This was the catalyst to spark the community's growth, attracting spring and fall visitors and thus acting as the initial "season extender" [AL-TM-001].

Another important spur to the development of the beachfront area was the completion of the Pensacola Bay/Mobile Bay section of the Intracoastal Waterway in 1934, built by the U.S. Army Corps of Engineers. The ICW linked rivers and bays along the length of the Gulf Coast, affording Gulf Shores access to more than 7,000 miles of inland water routes. It functioned as a divider as well as a connecting link, offering protection from the open sea for traffic of commercial barges, shallow draft vessels and pleasure boats. Access to the beaches across the swamps and marshes was greatly facilitated by the bridges built across the canal -- the original cement-filled floating barge was replaced by a swinging bridge in 1946, and the present highrise concrete bridge was completed in 1972.

The canal would eventually affect the future city's identity and its relations with entities outside its corporate limits. The man-made barrier island created by the dredging of the ICW comprised a part of Gulf Shores along with Fort Morgan and Orange Beach, and pulled these areas together into "Pleasure Island." It remains an important referent in relation to the major economic driver linking all three areas, tourism. The Island is now widely promoted as a package destination, with one chamber of commerce (the Alabama Gulf Coast Chamber of Commerce) and a joint Convention and Visitors Bureau, and there is a distinct coherence in their vision and strategies. In the city of Gulf Shores, the island part is primarily residential, tourist, and real-estate oriented. North of the intracoastal canal the mainland portion of Gulf Shores runs into Foley. This section, while largely serving the tourist economy, is more diverse, including a small industrial park.

For decades, however, growth remained slow. Asked by an interviewer in 1985 if Gulf Shores developed as George Meyer had envisioned, Erie Meyer reflected:

> It's much slower than we ever thought it would be, which is good; rather be slow than too fast. It has had some things that have pushed it in areas. I think he thought it would be done much faster. But otherwise, I think it's coming along very much as he thought it would be, because he never considered it anything other than a place for people who really enjoy the beach. Families to live here. So often when people come in with small children, George would say, "Now they'll never forget that. They'll be back" (Harrison, 1986).

In 1956, by a vote of 18 to 13, the settlement of 120 south of the ICW incorporated as the Town of Gulf Shores. The area incorporated was 206 acres. Immediately, a group of residents signed a petition to have the incorporation dissolved. Johnnie Sims, the first mayor, recalls the colorful events and provides a brief glimpse into a community in danger of straying from George Meyer's vision:

> In those days we had a lot of outlaws and hoodlums who didn't want law and order... This was a great place to hide out. We had gamblers and bank robbers. They were diabolically opposed to any government or law enforcement of any kind... They used scare tactics on people and got enough signatures to take it to court... (*Islander,* July 25, 1990).

The petition was granted by the county court, but the mayor and city officials appealed to the Alabama Supreme Court, which reversed the lower court's decision in 1958 and reinstated township status for Gulf Shores.

The early incorporation of Gulf Shores while the community was in its formative stages meant that local politicians (many of whom were, as mentioned above, local landowners and real estate developers) were able to shape the town's development according to their vision of a tourist destination. It meant, more importantly, that the town could begin to generate its

own revenue, invest in and manage its own infrastructure, and regulate the pace and direction of growth even while it was picking up momentum. This is in marked contrast to Orange Beach, where incorporation was effectively a post-facto reaction to a situation where growth had already exploded, unmanaged, into a small area. In fact, the oddity is that the area that became the incorporated City of Orange Beach in 1984 had a settled community much earlier than did Gulf Shores. Farmers grew oranges, satsumas and vegetables along the shores of Wolf Bay and Terry Cove as early as the 1800's, and logging and fishing were well-developed occupations of the area. In 1900 a shingle mill was established on Bay La Launch and several men who came to build and work the mill remained as permanent residents. By 1910, Orange Beach already had a post office and a school. In Gulf Shores, the first post office was established in 1947, and the school, on land donated by George Meyer, in the 1950's.

A number of milestones in the 1960's served to hasten the pace of Gulf Shores and Pleasure Island. The opening of the Gulf Shores Golf Club in 1965, the first of an eventual suite of 18 courses in south Baldwin County, contributed to lengthening the season for tourism. The completion of the bridge at Alabama Point made Florida accessible by road. A fishing pier was built in the late 1960's in Gulf State Park. This, along with the opening of Lagoon Pass from Little Lagoon to the gulf, turned fishing into a strong attraction for visitors to Gulf Shores. In 1969 the Gulf Shores Tourist Association was founded; it served as the marketing and promotion body for the island's tourist business.

In the 1970's, important additions to infrastructure and commercial development occurred in Gulf Shores. The W.C. Holmes high-rise bridge was completed in 1972, replacing the swing bridge that had caused lengthy traffic delays on Highway 59. The opening of the Holiday Inn directly on the beach is still remembered by several of the town's older residents as a significant landmark. Along with the State Park Hotel and Convention Center, also completed in the early 1970's, it created the impetus for off-season business in the city by actively pursuing conferences and conventions. Convention business has become particularly important to the larger economy of the city as convention visitors are believed to circulate more money into the local economy than vacationers. The National Shrimp Festival was initiated in 1971, now attracting upwards of 250,000 visitors for the October weekend event. (Swearingen and Myers, 1995). The early years of the festival were rocky. In 1975 shrimpers refused to parade their boats in protest over a town ordinance prohibiting trawling in the waters of Little Lagoon (Durrenberger, 1992).

Nevertheless, growth remained slow in the 1960's and 1970's. Marda Burton of the *Clarion-Ledger* paints this picture of Gulf Shores prior to the hurricane of 1979:

> For many years the area surrounding Gulf Shores has been the hideaway family playground for landlocked Southerners. So-called "coastal cowboys" in jeans and pickups rode down to the end of Highway 59 strictly for fishing, the sun and sand and

> a little hell-raising. Places like the Pink Pony Pub were practically falling into the Gulf, but nobody cared.
>
> No matter how often the chamber of commerce or Kenny Stabler, the football celebrity from nearby Foley, renamed the place ("Pleasure Island," "Home of the Coastal Cowboy," "Redneck Riviera" are a few nicknames), it stayed off the beaten track.
>
> Perfectly content for Gulf Shores to stay secret, the absentee owners of fish camps and beach homes felt comfortable, privileged and secluded in this tiny country town with clean Gulf waters for a main thoroughfare and hidden, moss-draped bayous for back streets. Tourism was arriving, but at such a slow pace as to be almost imperceptible (Jackson, Mississippi *Clarion-Ledger,* May 15, 1983).

6.6.2.2 Hurricane Frederic and the Aftermath

The defining event of the city's history occurred on September 12, 1979. Over 250,000 people evacuated Pleasure Island following hurricane warnings. That night, winds of over 145 miles per hour and a storm surge close to 15 feet lashed the island, the worst storm experienced since 1927. Damages to Gulf Shores alone were estimated at about $300 million: around 700 buildings were severely damaged or destroyed. In some places the beach was swept clean of dunes and buildings; in others the debris of buildings, furniture and felled trees posed a major cleanup task. The beach road was covered with several inches of sand. For the county as a whole, the damages to buildings, roads and agriculture were estimated at $1 billion. A bumper crop of pecans and a promising harvest of soybeans were devastated. The storm set a record as the nation's worst insurance catastrophe up to that point; claims amounted to a total of $1.7 billion (Birmingham *News* October 29, 1979). Subsequent damage estimates for Frederic came to $3.9 billion, prompting the following observation to Congress in 1992 by Robert Sheets, director of the National Hurricane Center:

> Prior to Hurricane Frederic, there was one condominium complex on Gulf Shores, Alabama. Most of the homes were single, individual homes, built behind the sand dunes... Today, where there used to be one condominium, there are now 104 complexes -- not units -- on Gulf Shores, Alabama... What have we learned? (Pielke and Pielke, 1997).

Gulf Shores and the Alabama Gulf Coast figured prominently in the national media coverage that followed the hurricane, and State and Federal agencies rushed in with various kinds of assistance. Mobile homes were flown in to house those who had lost dwellings in the storm; State and National Guard troops were brought in to assist with security and cleanup; the U.S. Corps of Engineers came in to clear debris from private homes; Governor James announced emergency funds to meet the town's payroll and other immediate obligations.

In the midst of the floods of assistance, there were some moments of misgiving, as fears were raised that the Federal government would use the disaster to take control of Gulf Shores' land. In a study carried out 2 years earlier by the Heritage Conservation and Recreation Service, commissioned by the Federal Emergency Management Agency, Gulf Shores had been designated a "barrier island." The study was aimed at reducing the huge amounts of money that the Federal government had to spend on storm damage repair in highly vulnerable areas. According to recommendations laid out by the study, areas designated as barrier islands would not be eligible for major Federal funds following disasters. State and local officials were particularly dismayed at the proposal because Gulf Shores had not been an island before the Federal government made it one with the digging of the intracoastal canal in 1934.

Eventually, lobbying efforts by State and local politicians succeeded in countering the proposal, and Gulf Shores received Federal assistance, primarily in the form of low-interest emergency loans, for rebuilding the city. It could begin to evaluate its options for rebuilding the town. A striking feature of Gulf Shores' response to the hurricane was how soon the initial shock, devastation and uncertainty gave way to a positive, somewhat opportunistic perspective, exemplified by the Gulf Shores Tourist Association's advertisement: "Gulf Shores is coming back bigger and better." Locals spoke of the hurricane as "nature's urban renewal project."

The process of rebuilding profoundly transformed the nature of construction and urban development in the city. The older concrete block buildings were replaced by upscale condominiums, bringing about a building boom that also changed the profile of visitors to the area. As an article in *Southern World* recounted, prior to 1979, "People didn't move to Gulf Shores to get rich; they went because they enjoyed it" (Harris, 1981). Hurricane Frederic was instrumental in accelerating speculative investment in Gulf Shores real estate. As a result of the national media publicity, city officials and businessmen began to receive numerous enquiries about cheap land for sale in the weeks and months following the storm [AL-KC-007]. Former Mayor Norton recalled, "I, like many other people, would have preferred it if Gulf Shores had not grown so fast. Hurricane Frederic advertised Gulf Shores. There were some who came in here looking for bargains at distress sales. There was an influx of developers who only had one purpose in mind: to make their money and get the hell out without any regard for the environment" (*Islander,* January 6, 1990). And, there were willing local sellers, those who chose to pocket their home insurance money and sell their storm-cleared land to newcomers [AL-TM-011].

6.6.2.3 Savings and Loans

By 1982, Gulf Shores appeared to be back on its feet. Tourist visits to Pleasure Island had increased to 3.7 million in 1982 (from 3.3 million in 1981 and 2.8 million in 1980). The most dramatic indicator of the revitalized industry was the growth in sales, use and lodging tax collected in Gulf Shores: $885,324 in 1982, up from $637,967 in 1981 and $330,555 in

1980 (Baldwin *Times,* March 9, 1983). In 1984, Gulf Shores officially qualified as a city, with a special census count establishing its population as 2,160. This represented an increase of over 52 percent from 1980, most of it in the preceding 2 years (*Islander,* December 13, 1984). The new status qualified Gulf Shores for additional State and Federal funds from programs such as revenue sharing.

Yet some local observers speak of the 1980's as a "false economy," driven by supply, not demand. What was in ready supply was capital, immediately from the hurricane's relief funds and then from the nation's deregulated savings and loan institutions. The financial history of the decade is a complicated one, but it began with legislation to remove the cap that financial institutions, particularly thrifts, could charge. In rapid succession, these efforts included, under President Carter, the Depository Institutions Deregulation and Monetary Control Act of 1980, then Reagan's deregulatory hallmark, the Garn-St. Germain Depository Institutions Act of 1982. Additional elements contributed to a real estate frenzy. Economist Lawrence White, surveying the impact of acts and oil prices, suggests that the Economic Recovery Tax Act of 1981 shortened for tax purposes the depreciation periods on real estate, and thus greatly increased the profitability of real estate investments. In the Southwest, particularly Texas, the prospective profitability of investment in real estate was "enhanced by many investors' expectations of continuing increases in the price of oil... commercial real estate projects boomed -- especially in the Southwest. Thrifts were major financiers of and investors in these projects" (White, 1991a).

But oil prices fell -- below $10 a barrel briefly in the summer of 1986, then fluctuating around $15. White summarizes: "... not only did the price of oil fail to rise to the heights that many had expected, but it fell to levels that were only half those of the early 1980's. Again, this change could only mean a sharp fall in real estate values in the oil belt" (1991a).

Gulf Shores was touched by these dynamics. Oil money contributed substantially to the building boom of the early 1980's, creating a situation in which "development got out in front of tourism," according to one local observer [AL-TM-010]. The overbuilt city experienced a local depression in the mid-1980's, with foreclosures, auctions, and the departure, "like goldminers," of the fast-buck outside investors. Then, following severe summer rains in 1985, Hurricane Elena struck over Labor Day weekend, furthering the community's troubles. Next came the Tax Reform Act of 1986, an effort to reign in the excesses of deregulation. Depreciation periods were lengthened, and the ability of real estate investors to hide other income with their "passive" (depreciation-related) losses was reduced. Provision of the Act applied to existing real estate projects as well as to prospective ones. As White notes, "Such changes in the tax code -- to the extent that they were unanticipated by the real estate markets before, say, 1985 -- could only mean a decrease in real estate values" (1991a).

The debates that preceded the Tax Reform Act in 1986 carried suggestions that the tax exemption on second homes might be removed. Although the Act did not eventually contain

this provision, the talk itself had a significant impact on potential buyers of condo units in Gulf Shores. This was recalled as one of the most critical periods of Gulf Shores' recent history [AL-KC-005; AL-KC-009; AL-TM-010].

By 1989, the speculative boom busted. The national savings and loan disaster involved the collapse of five corporations in as many States, costing the nation's taxpayers some $500 billion in bailing-out costs. Baldwin County Federal Savings Bank was among the banks taken over by the Federal government in 1989. A national recession in the real estate and housing industries ensued in 1990 as credit got tighter and the Federal government imposed stricter lending restrictions (*Islander,* November 23, 1990; cf. White, 1991a). In the midst of this, the real estate business community and property owners in Gulf Shores received another blow when the Resolution Trust Corporation held a public auction of 24 plots of land in November 1990, at values amounting to about half the appraised value of the land. The auction was part of the Federal government's attempt to recover costs by liquidating assets it had acquired in taking over the Baldwin County Federal Savings Bank. This available land would prompt another building spurt in the early 1990's (see Figure 6-3), but the speculative frenzy, for the most part, was over. Condominiums still rise on Orange Beach, where land is available, but Gulf Shores has attempted to let the pace of tourism, not speculation, drive its growth.

6.6.2.4 Play and Work on Pleasure Island

Gulf Shores' boosters in the 1990's promote George Meyer's original vision -- a family-oriented vacation spot with a variety of day-time activities and a modest night-life, poised between the honky-tonk and the collegiate set on the Florida panhandle, and the casino-lined boulevards stretching the length of Mississippi's shore. Pleasure Island is marketed aggressively as an entire package, offering a range of diversions from charter and sport fishing and marina activities to beaches, concerts, upscale accommodation and resort golf. A recent avenue of diversification that is receiving attention is nature tourism and birding. Proposals to modernize and further develop Gulf State Park have been rejected in favor of preserving its pristine natural qualities. And it remains primarily a family vacation spot for local visitors: 75-80 percent of tourists to Pleasure Island are from Alabama, another 15 percent from Louisiana (Evans-Klages, Inc., 1998).

A defining feature of Gulf Shores' social and economic life, its seasonality, is part of its legacy from the inception of the town. Several long-time residents or natives recalled that in the early decades the town more or less shut down after Labor Day and opened up again on Memorial Day. To anybody who knew the place (and according to former Mayor Johnnie Sims they were not many: "you could walk down the street in Montgomery and not even 1 out of 10 people would even know of Gulf Shores"), it was the place they went in the summer -- either on vacation or as high school students on summer jobs.

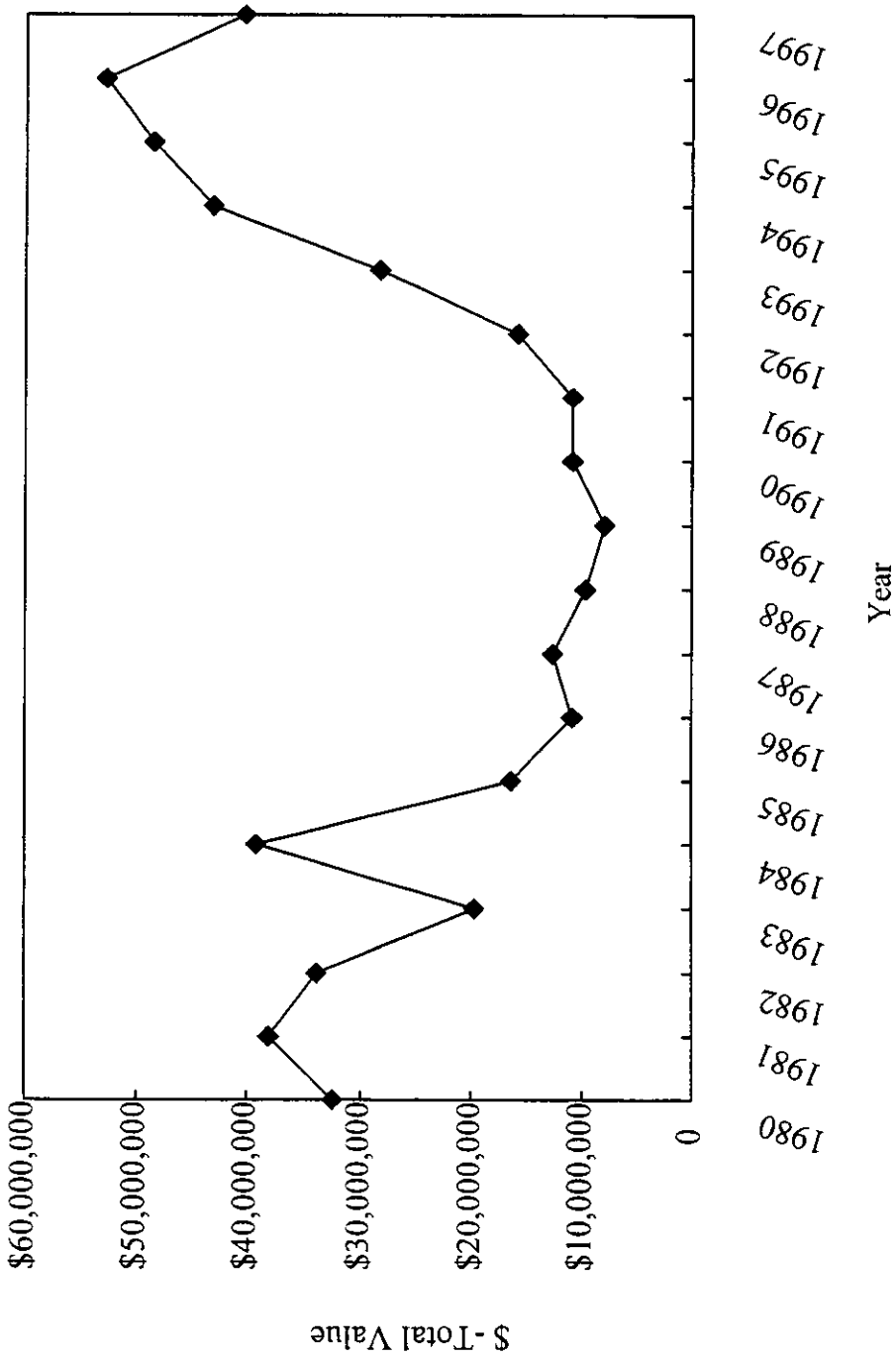

Figure 6-3. Gulf Shore building -total value of construction. (1998 constant dollars)

Source: Alabama Gulf Coast Chamber of Commerce, n.d.

A number of developments in the last 20 years have substantially eased the extreme seasonal swings. Just before and soon after Hurricane Frederic some of the larger resort hotels began targeting conventions and meetings as off-season custom. The development of several golf courses opened up the market for resort golf packages, and most important, the construction of condominiums attracted retired winter visitors ("snowbirds") who began to stay longer, until they constituted a significant part of the population for up to 6 months of the year. Nevertheless the marked seasonal life of Gulf Shores remains. The population increases more than tenfold between May and September, causing significant increases in demand for workers across the range of businesses and pressure on roads and infrastructure in the city (see Figure 6-4). This season accounts for between 75-80 percent of the annual revenue for most businesses in the city. The swings affect restaurant and retail businesses most adversely. The accommodation business in general succeeds in keeping up (through special monthly rates) a minimum level of utilization, mainly through the retiree clientele who, on the other hand, tend not to spend their fixed incomes on eating and shopping in the off-season. The president of the area's chamber of commerce noted that businesses that are most likely to fail in the city are newly established ones whose owners do not understand the seasonal pattern [AL-TM-010].

In 1996, Baldwin County ranked 53rd out of Alabama's 67 counties in average wage. Lance LaCour, direction of the county's Economic Development Alliance, attributed this to the leisure landscape:

> To find the reason why Baldwin lags behind in pay, people need to look no further than the fast-growing sprawl of retail shops, hotels and restaurants in much of south Baldwin County and the Eastern Shore.
>
> So while Baldwin's unemployment rate is very low, the labor force is weighted with service-oriented jobs that typically don't pay much, LaCour said (*Baldwin Register,* January 25, 1998).

Within a 30-mile radius of Gulf Shores, where much of the town's workforce lives for lack of adequately-priced housing on the island, there were 55,386 employees in service and retail jobs in 1997 out of a total employment enumeration of 88,183 (Alabama Gulf Coast Chamber of Commerce, n.d.). Many of these jobs depend on the ebb and flow of tourists through the seasons.

6.6.2.5 Coastal Zone Management

Outside actors play a role in shaping the man-made landscape of Pleasure Island. There are those who are not terribly pleased by this. In a letter to an official of the Alabama Department of Economic and Community Affairs (ADECA), one of the State agencies designated to oversee the State's Coastal Area Management Plan, Senator Richard Shelby expressed his displeasure over the Coastal Barrier Technical Corrections Act of 1995:

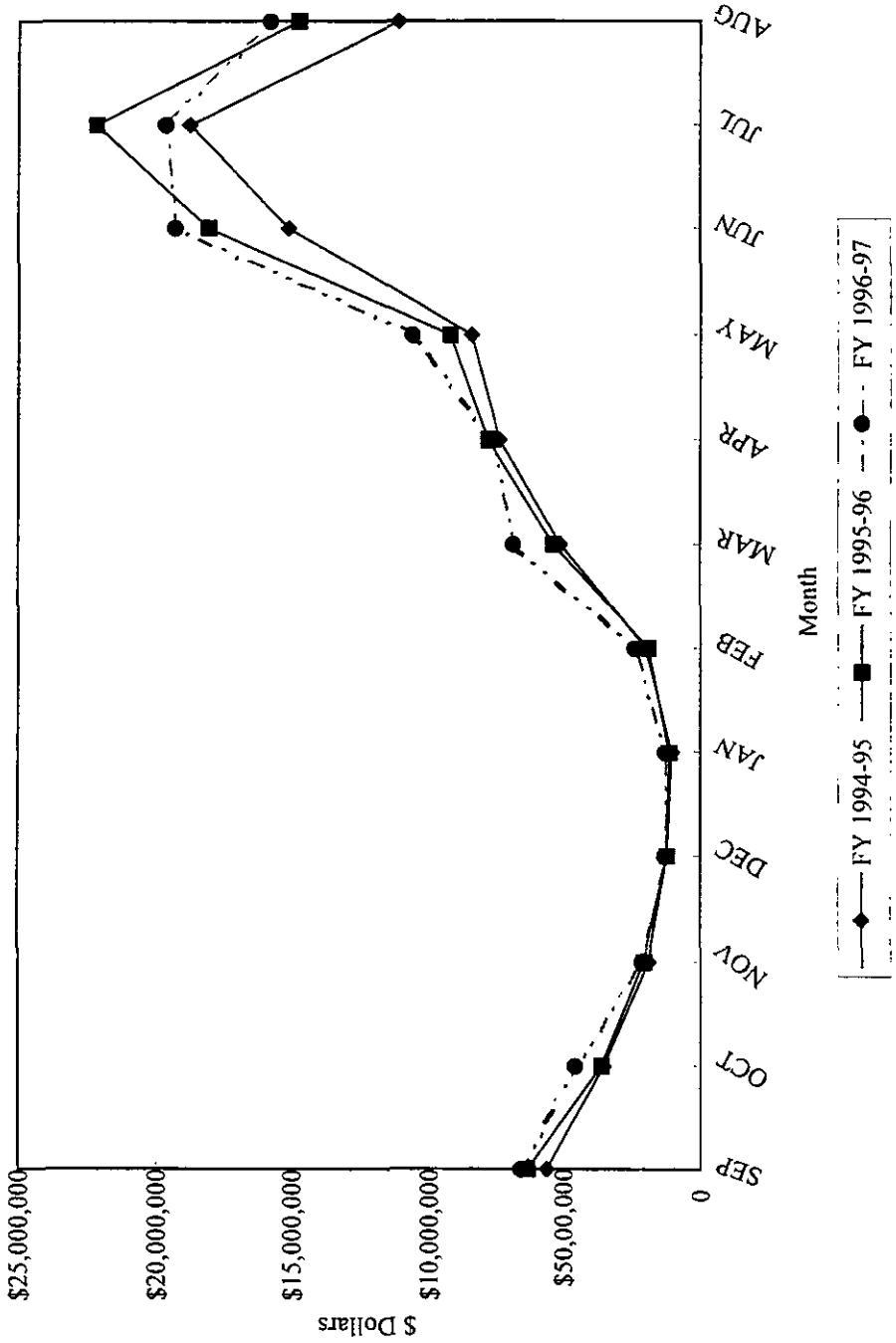

Figure 6-4. Taxable lodging sales: Gulf Shores and Orange Beach, Alabama.

Source: Alabama Gulf Coast Convention of Visitors Bureau, 1998.

> "I understand that some of my constituents have concerns about development along the Gulf Coast. However, the property in question [on Fort Morgan Peninsula] is going to be developed regardless of whether the land is included under the provisions of COBRA [Coastal Barrier Resources Act, 1982]. The State of Alabama has made consistent recommendations for the exclusion of this property as is clearly indicated by all existing documents. To allow the U.S. Fish and Wildlife Service or any other bureaucratic institution to write the laws of this land is wrong, and I will not allow the people of Alabama to be intimidated by the Fish and Wildlife Service or any other faction of the Federal government."

COBRA is but one piece of Federal legislation brought to bear on the nation's coastal areas. It was preceded by the Coastal Zone Management Act of 1972 (P.L. 92-583), requiring coastal States to establish and implement coastal regulations. The act declared that it was in the national interest "to preserve, protect, develop, and, where possible, to restore or enhance the resources of the Nation's coastal zone for this and succeeding generations" (ADECA, 1998). Environmental historian Samuel Hays recounts the tensions inherent in such a broad mandate as it unfolded during the 1970's:

> While the 1972 act had a significant overlay of environmental language, befitting the tenor of the times, it also contained a major element conducive to intensive coastal development. The resulting program, which provided Federal funds to the States for coastal-zone planning, displayed this blend of forces, as over the course of the 1970's it slowly shifted toward development. Only in a few States such as California did environmental objectives remain strong. Federal involvement in coastal-zone matters, moreover, often strengthened the position of developmental advocates (Hays, 1987).

He notes in particular that the Department of Energy sought to blunt the role of the States in coastal zone planning, fearing the States might restrict construction of large-scale energy facilities.

Alabama's coastal management plan, which gives permitting, regulatory, and enforcement authority to the Alabama Department of Environmental Management (ADEM), reflects this tension. In its "resource use policy," the plan encourages "development and use activities that promote benefits to all generations of Alabama's citizens and maximize stewardship of the natural coastal resources," while its "hazard mitigation policy" promotes State and local land use planning that avoids development in hazardous areas (ADECA, 1998). The former guided the permitting process for Mobile County's gas and chemical plants, while the latter caused some consternation in Gulf Shores, until local planning prevailed over State planning.

Alabama's coast has always been prone to devastation by hurricanes. According to Erie Meyer, her husband George had always warned "Now, Erie, sometime, one of these days, a storm is going to hit. Don't be dismayed by it because the weaker things will go, the strong

will stay, and you'll find a different mode of building coming back." (Harrison, 1986). Given this, the lack of a strong precautionary foundation in Gulf Shores' building codes is surprising. Gulf Shores has a much shallower beach front in terms of the distance between the ocean and the highway, and the height of the highway from the beach, than does Orange Beach. Nevertheless, the precariously close construction in Gulf Shores has been an issue both for the city's residents and for others in the county and State. But traditions of weak government and an adversity to planning that would negatively affect property values and development, render it unlikely that serious building reform will be implemented in the near future, unless another major hurricane appears. This latter possibility may trigger Federal restrictions and prohibitions on coastal development.

The State, in attempts to regulate beachfront building, established a rule that required builders to stay at least 40 feet behind the crestline of the primary dune system. These regulations, however, often required specification of setback distances on a case-by-case basis and produced so many disputes and lawsuits that in 1985, ADEM replaced it with a coastal construction control line (CCCL) that would simply chart a continuous beachfront boundary for construction and provide maps and markers showing the line. The ADEM lines were highly contentious. Private property owners argued that the new line would effectively take as much as two-thirds of their land out of use without any financial restitution; others argued that the lines were too close to the water, or that the regulations provided loopholes through which determined developers would be able to jump (*Islander,* October 10, 1985).

Ultimately, buildings in Gulf Shores were excluded from ADEM's maps because of an ordinance allowing the town to enforce its own setback lines -- five feet inland from the crestline of the primary dune system (ADEM, 1995). However buildings violating the State dune line could be denied the right to rebuild on the same spot if they were 50 percent or more destroyed in a storm. A University of South Alabama geologist visiting the area after Hurricane Elena found Gulf Shores displaying the most marked dune erosion in the county. "Too much of it is built too close to the water," he noted (*Islander,* October 10, 1985).

The Coastal Barrier Resources Act of 1982, the act which Senator Shelby sought to amend and correct in 1995, had a more specific purpose than the broad-based Coastal Zone Management Act. It was a mapping exercise to implement the Omnibus Budget Reconciliation Act of 1981 (OBRA), which itself amended the National Flood Insurance Act of 1968 (NFIA). OBRA contained the provision that will halt the availability of flood insurance for new development or major improvement of structures located on designated undeveloped barrier islands starting on October 1, 1983 (Gordon, 1984).

With Gulf Shores and the Alabama-Mississippi coast still rebuilding in the wake of Hurricane Frederic, Congress had identified NFIA as second only to Social Security in potential monetary liability. OBRA and COBRA were attempts by Congress and the Reagan administration to trim the Federal budget (Gordon, 1984).

Lines were ultimately drawn by the U.S. Fish and Wildlife Service around 820,000 acres of undeveloped coastal barriers on the Atlantic and Gulf Coasts, including 6,200 acres in Alabama. COBRA did not preclude development of that acreage; it simply curtailed Federally-subsidized insurance. Shelby and fellow Alabama Senator Howell Heflin introduced legislation for "technical corrections" to the map, contending that the Alabama acreage had begun to show signs of development prior to the 1982 legislation and thus qualified for Federal insurance. Their bill failed.

6.6.2.6 The Oil and Gas Industry in Gulf Shores and Baldwin County

In December 1990, a symposium of the Gulf of Mexico Program, sponsored by the U.S. Environmental Protection Agency (EPA) and other State and Federal agencies was held in New Orleans. This major initiative brought together all interested parties (over 900 people) in a 5-day multi-State conference to discuss environmental problems in the Gulf of Mexico. Strong notes of caution were issued by representatives from States that had a long association with the oil industry. Officials from Texas State agencies such as the Parks and Wildlife Department and the Land Commission warned that with the 1988 moratorium on offshore oil drilling near the East and West coasts and off the Florida coast, pressure for domestic production would intensify in the Gulf of Mexico, bringing greater threats of oil spills to the gulf and its inland estuaries. They cited the case of Galveston Bay which suffered two devastating oil spills in the summer of 1990, when 100,000 gallons of oil headed for Texas refineries and U.S. gas stations spilled from a Norwegian supertanker outside the barrier islands off the Galveston coast. Galveston, a beach resort community similar to Gulf Shores, suffered a major setback when tourists heard about the spill and stayed away. According to the officials, the local bureaucracy was unprepared and the oil industry slow to respond. The officials stressed the need for a gulf-wide compact to set up a concerted response system to oil spills and other disasters.

Oil industry representatives at the symposium displayed their concern for the protection of the gulf ecosystem. Representatives of Conoco and its parent company, DuPont, called on oil companies operating in the gulf to reward whistleblowers and go beyond the law in protecting the environment. The company promised to base executives' salaries on their environmental protection records, to report every oil spill, and to separate oil and produced wastes at sea instead of barging it to shore (*Islander*, December 8, 1990).

Despite these declarations, environmental groups such as Greenpeace International, Perdido Bay Environmental Association, and the Louisiana Environmental Action Network protested that the symposium was dominated by industry sponsors and that the gravity of the threat to the gulf ecosystem had been downplayed or whitewashed. The EPA came under attack for dragging its feet over studies without any constructive action.

Opposition to the offshore industry has been particularly pronounced in Gulf Shores, coinciding with its blossoming real estate market and reinvigorated tourist activity in the

early 1980's. Several local officials and real estate businessmen interviewed for this study described the pronounced negative reactions that the rigs provoke from actual or prospective buyers. One of them told how a buyer who had put money down on a condominium called him up in a panic when he heard reports of prospective rigs in the gulf, and threatened to withdraw his investment.

Opposition on Pleasure Island centers around the issue of the visibility of offshore rigs and its effects on the tourist industry. The upheavals began in 1996, when the Department of the Interior proposed new leasing opportunities in Federal tracts that were covered under a 1988 national moratorium applied to certain protected areas (including the Eastern Gulf of Mexico Planning Area, the Pacific Northwest and the Eastern Seaboard). Ironically, although the State of Alabama has actively encouraged the offshore oil and gas industry, a section of the Alabama coast (about 15 miles west of the Florida State line, to a point west of Gulf Shores) came to be included in the Eastern Gulf zone (through what has been described as "an accident of cartography") and thereby was included in the moratorium. It was this section that was under consideration by the MMS for leasing, either through relaxation of the moratorium on leasing in Federal waters, or through modification of the boundary between eastern and central zones. The proposals were first endorsed by Alabama's Governor James, but vehemently opposed in the areas under consideration. West Florida strongly opposed the proposal to move the boundary eastward. In a document commenting on the Outer Continental Shelf Draft EIS, the West Florida Regional Planning Council (WFRPC) insisted:

> If boundary revisions between the planning areas must occur, WFRPC staff recommends no movement of the said boundary beyond any point east of the stated statutory boundary between the States of Florida and Alabama. Movement of the said boundary (eastward) would place the residents of West Florida and the State of Florida in a position where major OCS policy would be strongly influenced by neighboring States (U.S. Department of the Interior, 1996).

While Florida was apprehensive about the oil-friendly stance that Alabama had demonstrated thus far, a coalition of interests in southern Baldwin County, with support from other parts of the State, was converging in opposition to the MMS proposals. The cities of Gulf Shores, Orange Beach and Foley, civic associations from unincorporated parts of the area, business interests, numerous environmental groups, and private citizens organized to lobby the State against lifting the moratorium, and to request the maintenance of a buffer zone of 15 miles offshore where no drilling rigs would be permitted. Eventually they won the support of the State legislature and the Governor, presumably in recognition of the contribution of the tourist industry to the State's coffers.

Gulf Shores officials and spokespersons repeatedly stressed that they believed their position was very reasonable and that they were not opposing offshore drilling completely, as Florida had. They were simply trying to protect the industry that was their major and very successful source of livelihood [AL-KC-001; AL-KC-003].

There are substantial misgivings among Pleasure Island's government and business community as well as a large cross-section of its citizens about signs that the MMS was going ahead with leasing despite their submissions. Two leases within the 15-mile buffer zone had come up for releasing, and the agency had been accepting bids. Some influential members of the community warned that if their requests were not respected, they would be forced to take a harder line akin to that of Florida, and oppose offshore drilling altogether [AL-KC-001].

While businessmen in the tourist and real estate sectors oppose offshore oil and gas activity mostly because of its visual disadvantages, other citizens and activists had other serious concerns. Residents of Fort Morgan Peninsula spoke about gas leaks and spills that they believed they had smelled, and about the absence of mechanisms to respond to such events. The local fire department was not equipped, they claimed, to even ascertain whether there had in fact been a leak. Emergency evacuation procedures in the event of a leak were full of holes at best; many felt the procedures would collapse in a real crisis. Representatives of oil companies had been to the area to reassure the population about the safety of the installations, but they failed to inspire trust [AL-KC-008].

Ironically, as opposed as Gulf Shores and Orange Beach are to oil and gas, certain features of their development pattern show striking similarities to those of communities closely tied to the offshore oil industry. Constant inflows of temporary or non-resident labor and a large degree of population mobility, very heavy reliance of entire towns on a single economic sector, rapid and periodically overheated growth, and acute vulnerability to collapse (when the major sector faces a decline) are characteristics that describe both the cities of Pleasure Island and the towns of south Louisiana that harbor the offshore oil industry.

6.6.3 Rigs to Reefs

One charter boat skipper in Orange Beach expressed a sentiment common in the recreational fishing sector across the leisure landscape of the Gulf Coast: "We love rigs. It's a shame those people in condos don't like them" [AL-TM-004]. Deep-sea charterboat fishing is big business on Pleasure Island. The 105-boat fleet attracts 84,000 visitors annually to Alabama's coast and generates $35 million locally in charter fees, boat expenses, and lodging and food expenditures (Malone, 1994). A similar picture holds for all locations on the coast which possess protected harbors, bulkheaded marinas, and visitor accommodations. Offshore rigs attract both fish and fishermen, and State fisheries managers freely give advice to sportsfishermen:

> Offshore gas structures are private property. While it does not often happen, companies do have the right to restrict you from mooring to their platforms. If you should moor to a platform, take care to avoid any discharge points, vent lines or other hazardous areas. Recreational boats should always yield to the passage and mooring requirements of crew or supply boats servicing these platforms. Many accounts have

> been recorded where the lives and property of offshore fishermen have been salvaged courtesy of the offshore petroleum industry. Be good neighbors offshore (Alabama Department of Conservation and Natural Resources, 1998).

Commercial shrimp trawlers do not particularly like the rigs, nor the acres of obstructions created by State and Federal programs promoting artificial reefs: scuttled platforms, cars and school buses, railroad box cars, military tanks, household appliances, and, off the Alabama coast, mothballed Liberty ships. Alabama has had an artificial program since the 1950's, which now covers 1,200 square miles. This constructed habitat, affording food and shelter for gamefish targeted by the hook-and-line tackle of sports fishermen, "takes up a lot of territory" that cannot be trawled [AL-TM-007, fish house operator].

But on the issue of rigs and reefs, and most other matters, commercial fishers have lost their political and economic voice in direct proportion to the rise of the leisure landscape on the Gulf Coast. The first major loss came in Texas in 1977:

> a group of about twenty sportsmen, some wealthy and some not, met in Schero's Sporting Goods Store in Houston. They were convinced that excessive commercial fishing was killing sport fishing in Texas bays, and they determined to do something for the trout and redfish in much the same manner Ducks Unlimited had done things for ducks. They named their group the Gulf Coast Conservation Association (Fritchey, 1993).

Oil executives were among that founding group of the GCCA, which also included a member of the Texas Parks and Wildlife Commission, the State agency in charge of managing commercial fishing. Among the things they accomplished for the speckled trout and the red drum, the two most popular target species for anglers, was a designation of these species as gamefish in 1981, reserving them for the recreational sector, and a complete ban on commercial gillnet fishing in 1988. Robert Fritchey, correspondent for the commercial fishing industry's journal, *National Fisherman*, gives a brief picture of the results:

> Some netters, however, continued to target redfish and trout in spite of the ban. "We had to do something, you know," explained a young fisherman. "Another guy and I, we were haulin' the fish about 50 miles from here and sellin' 'em. We'd watch 'em weigh the fish and then we'd be gone. Every two days we were pickin' up anywhere from 2,000 to 2,800 pounds. Mostly reds but some trout at times.
>
> Rustlin' redfish was serious business, though. "I've got a stack of violations," he admitted.
>
> Another fisherman explained the situation immediately after the closure: "When they closed it down, you could still make good money bootleggin' because these

> restaurants and fishhouses were in a state of shock. They had a lot of money invested and they had to have fish..." (Fritchey, 1993).

Louisiana, Alabama, Florida, and South Carolina followed the Texas initiative and declared redfish and speckled trout as "gamefish" in the 1980's, reserving them for the recreational sector. Then, through a statewide campaign which implanted the image of the miles of abandoned Japanese "ghost nets" in the Pacific in the public's mind, Florida voters adopted a commercial gillnet ban in 1994, set to go into effect July of the following year.

Alabama, fearing an impending invasion of 5,000 displaced Florida gillnetters into its State waters, with the pressure this would put both on fish stocks and the 600 full- and part-time Alabama gillnetters, worked out a compromise in June of 1995, a month before the Florida ban was to go into effect. The legislation, hammered out by both the commercial and recreational sectors, established a limited entry fishery for professional gillnetters, some 200 fishermen who, through tax forms, could establish a past record of reliance on the fishery. Eighteen gillnet licenses were issued to Florida fishermen who have customarily fished Alabama waters, and their fee was raised from $750 to $4,000. Enforcement was enhanced: seasonal and area closures were monitored, and the prohibition on commercial gillnetting near residential boatdocks, popular fishing spots for anglers, was enforced. The legislative package, passing unanimously on the last day of the session, appeased both the commercial and recreational sectors [AL-TM-006; AL-TM-002].

Alabama's charter boat owners stayed out of this fish fight. Gillnetting, an inshore activity, was not an issue to the party boats fishing deep water holes 40 to 45 miles out into the gulf -- "out past the boat traffic," as one skipper put it [AL-TM-005]. The charter boat fleet has its own nemesis: the National Marine Fisheries Service (NMFS), regulators of Federal waters. In a chain of circumstances some attribute to a New Orleans chef's popularization of the generic "blackened redfish," the shortage of coastal-water red drum entering the restaurant channel as this species was defined as a gamefish, and concomitant commercial fishing pressure of the deepwater red snapper stocks, NMFS reduced the recreational bag limit on the snapper from ten to four in the 1990's. Clients are still exhibiting what leisure economists would call a "willingness to pay:" day trips on the weekends are typically booked a year in advance. At $120 a person, it is expensive fish. As one charter boat owner put it, "They come back with a zip-lock bag's worth of fish. Hope they come down here to enjoy the day" [AL-TM-004].

6.6.4 The Leisure Landscape in Retrospect and Prospect

Gramling and Freudenburg conclude their discussion of "Crude, Coppertone, and the Coast" with an observation that now rings with some irony:

> In the oil patch of southern Louisiana, the good times no longer roll, whereas in Florida, both the hotels and the coffers are full. Louisiana's oil region has already

> been bedeviled by bust-related problems for almost a decade, and it is increasingly clear that the State can no longer ignore the inherently finite nature of the remaining oil reserves off the coast; whereas southern Florida has continued to enjoy the economic benefits of exploiting the amenity value of its beaches, theoretically an infinitely renewable resource (Gramling and Freudenburg, 1996).

With the recent increase in deepwater oil and gas activity, southern Louisiana is undergoing, albeit fitfully, a new boom. Port Fourchon, at the end of Bayou Lafourche, is capturing much of this expansion. When the residents of nearby Cheniere Caminada made the sagacious move up to the higher levees of Bayou Lafourche following the 1893 storm, there was no national disaster program in effect. With the safety nets now in place, which compelled the Federal government and taxpayers to defray much of the $65 billion damage from Hurricane Andrew in 1992, the leisure landscape of the Gulf Coast is indeed thriving, as Gramling and Freudenburg attest. Writing a brief "unnatural history of natural disaster" in south Florida after Andrew, historian Theodore Steinberg (1997) chooses to refer to the region as a "do-it-yourself deathscape."

6.7 Conclusions

Several brief conclusions may be drawn from this review of the historical, social, and economic landscapes of Gulf Coast communities. First, and of no surprise since this flowed from the study design: OCS oil and gas activities have had variable impacts along the coast. Direct impacts have been felt most directly in the Louisiana "core." Offshore drilling started there, and the region continues to service, and be served by, the industry. Mobile Bay is a relatively new host to producers of gas and its refined products, though it has long been a zone of heavy industry. Coastal Bend has connected to petroleum in complex ways, as a fabrication center for offshore structures, as a refining region for domestic and foreign oil, and, recently, as the home port for the U.S. Navy's minesweepers, whose primary task is to keep the world's harbors and shipping lanes clear. Much of the cargo passing on those waters is oil. Oil economics have impacted the most disparate of the study's communities as well. When oil prices are high and production is "blowing and going" off of south Louisiana, growers in Mathis are squeezed by the price of diesel (which are set outside the region). When there are profits to be made in petroleum, some of these get invested, for better or worse, in Gulf Shores real estate.

Despite this variability, there are some commonalities across the region. With a history and rhetoric of separatism, the Gulf Coast, like the South, is tied to Washington by multistranded cords. The Department of Agriculture mediates the agricultural landscape; Defense creates the military landscape; FEMA subsidizes life on the beach; the National Marine Fisheries Service attempts to regulate the maritime landscape; the Army Corps of Engineers maintains Mobile Bay and its industry. Some of these Federal interventions are more welcome locally than others; all of them, and a host of others, have shaped the landscape of the gulf.

Nor is the Gulf Coast insulated and isolated from global forces. Cajun oil workers and boat captains are as knowledgeable of the North Sea as they are of the Louisiana bayous and bays. Many of the fabrication yards and flower nurseries along the Gulf Coast employ as many Latin Americans as North Americans. American shrimpers compete with Thai shrimp farmers; Alabama gillnetters sell their mullet roe to Asia; Mathis growers sell grains to Russia. South Mobile County is rapidly becoming an industrial outpost of Germany. The price of oil, and all this means to the upstream and downstream, backward- and forward-linked activities along the Gulf of Mexico, may be set, arguably, in the Middle East.

Finally, notions of planning and zoning are largely foreign to the Gulf Coast and its communities. A dominant feature of the coastal landscape in the almost chaotic intermixture of land uses; in most cases, this is due to local reluctance to plan and manage that landscape. Nevertheless -- or because of this -- there is a substantial level of local concern and consternation over land uses, despite the general characterization of region as oblivious to environmental issues. This growing concern may, in time, alter the look of the land.

7.0 Oil, Occupation, and Education Along the Gulf of Mexico

7.1 Introduction

Evaluating impacts of one area of social and economic life, even one as pervasive as Outer Continental Shelf activity, is complex. The target factor must be disaggregated from a myriad of other forces. This section uses qualitative data gathered in a rapid, ethnographic study to examine the impacts of OCS-related activity in one area: occupation and education in Gulf Coast communities.

OCS activity impacted education and work in communities along the Gulf of Mexico in the period of rapid and extensive industrialization that followed World War II, so its impacts on education and occupation must be viewed in that context. A hallmark of industrial society is that traditional means of educating youth for adult occupations, such as passing information and skills from parent to child or from master to apprentice, are not considered sufficient for ensuring that young people acquire the social and technological knowledge necessary for their survival. Widespread schooling is a consequence of industrialization, and compulsory education and child labor laws were enacted to ensure that young people attended schools and stayed out of the workforce. With the return of World War II veterans, the GI Bill, and the promotion of college life, young adults, too, were encouraged to stay in school and out of the workforce. Even after the war veterans had left college campuses, "public infatuation with college graduates" persisted and "traditional elite images and associations [became] enmeshed within the mushrooming number of postwar media presentations of college as a more democratically open and economically practical opportunity" (Clark, 1998).

Since the first expansion of formal schooling beyond the elite classes, though, fundamental clashes have occurred over education that is classical or academic (for culture) versus practical or technical (for work) and the role of each in U.S. education. Debates have raged about whether secondary schools exist (1) for socialization, (2) for selection and preparation for higher education, (3) as a source of general education, or (4) as a source of technical and vocational training. Although a standard secondary curriculum for all may benefit individuals and the nation, it may hinder those who do not go beyond mandatory schooling and whose opportunities for economic success are therefore limited by lack of specialized training. Indeed, schooling as preparation for the workforce has been a central feature of industrialized societies, and a key argument for supporting vocational education since its inception has been to increase the nation's competitiveness in world agriculture and industry (Timmons, 1988; Barlow, 1992). Because of the perception that education is an answer to both social and economic problems, shifts in education reflect other societal changes.

> Most major periods of national concern about education - and the reform movements that have emerged from them - have coincided with periods of social and economic disruption, and in some ways have been responses to them... Life in schools and classrooms is vulnerable to the disruptions in the communities around them: unemployment, crime, substance abuse, sudden

> wrenching shifts in demographics - all of which, themselves, are causally linked to broader social and economic transformations... (Rose, 1995).

A significant aspect of industrialization is the increasing segmentation of work from other aspects of living, such as family and recreation. The same is true for education in industrialized societies, as formal education, or schooling, becomes increasingly institutionalized and separated from other life activities. Thus, the industrialization that accompanied the arrival and evolution of OCS activity had a dramatic influence on education in many communities along the Gulf of Mexico, less in the isolated variables such as drop out rates and enrollments in higher education, than in the subtle and continuous shift from a preindustrial society where family, community, occupation, and education overlapped to a highly segregated social order where formal schooling has come to be valued as an end, apart from what it offers the individual, family, or community.

At the same time, other factors, such as the southern problem of maintaining a labor force in the post-Civil War era when slaves had been freed, and the need of the power elites to ensure the dependence and loyalty of both black and white laborers, had set the foundation for the relationship between education and work long before World War II and the discovery of offshore oil and gas (see Box 7.1 at the end of Section 7.1). By the 1920's, the southern public education system was serving two primary purposes: (1) socialization through the maintenance of class and racial distinctions; and (2) selection via the raising of whites and blacks for opportunities to suit their station. Stemming from a different historical context, the relationship between education, work, and ethnicity among Anglos and Hispanics in south Texas nevertheless was similar in nature to that found elsewhere in the South.

Education and occupation also can be viewed as aspects of social capital, the networks of supportive, interpersonal interactions within households and communities that contribute to the economic, political, and social lives of communities. Changes in the patterns of interaction among and between youth and adults can enhance or hinder the development and maintenance of social capital (Smith et al., 1995; Hobbs, 1995; Beaulieu and Mulkey, 1995). Schooling has generally been seen to enhance social capital development, but its tendency to separate youth from adults may have the opposite effect. In their responsiveness to occupational shifts, or lack thereof, educational institutions often reflect not only what communities are but what they are likely to become. Influences on and changes to educational institutions and outcomes have long-term significance. Major industrial activity can affect education through changes in (1) the values and attitudes of community members toward education, (2) the role of education in individual employment decisions, (3) the personnel available for teaching and administration, (4) financial and other resources, and (5) access to educational opportunities. These factors are considered in this section.

The extent and influence of OCS activity varies from place to place along the gulf. In general, as Section 6 shows, there is no single Gulf Coast history of land use and labor processes. Similarly, because educational systems are locally governed and administered in

the United States, there is no single history of education along the coast. As shown in Section 2, the history and culture of the Gulf Coast influenced the transition to industrial society, in OCS-related activities and other occupations. That history and culture also determined, to a large extent, how educational institutions developed (see Box 7.1). As in Section 6, the purpose of this section is to examine how global, national, and regional policies and events are experienced locally. This section reexamines the selected study areas for the historical period from World War II to the present, focusing on prevalent occupations of community residents, the continuity of those occupations across generations, and the relationship between education and occupation. Although funding is very important to education and is affected by OCS activity, a sophisticated analysis of school financing in any of the study areas was beyond the scope of this study. Financial issues are discussed in general terms. Particular attention is paid in this section to education at the secondary level and beyond, especially vocational education (see Box 7.2 at the end of Section 7.1).

Work and education evolved together in Gulf Coast communities, and that interdependence is especially noticeable in communities impacted by OCS-related and other industrial activities. The section demonstrates that the rise and fall of vocational and technical education was influenced by the State and nature of local, State, and national economies, within which the role of oil has varied (see Section 3). The study communities, like all Gulf Coast communities, also were affected by national educational and labor policies. Figure 7-1 shows some of the policies that affected work and education in the Gulf Coast communities, according to the periods of offshore activity during which they occurred. Though education policy reform is a near constant in U.S. society, it is useful to note, for example, that the period of recovery following 1993 also has been a period of reform of both academic and technical education at the State and Federal levels. These policies and their impacts are discussed in the main subsections and in text boxes.

Information in this section was gathered from a rapid ethnographic study of the three study areas conducted between October 1997 and June 1998. The research team spent a combined total of at least 75 days in each region. During the field visits, researchers conducted informal conversations, discussions, and reviewed documents. More than 100 discussions occurred in each region, and local newspapers were used to identify significant local events and provide detail about issues raised during discussions. Participants were assured anonymity, so only general characteristics are included to describe speakers. Interview numbers allow readers to note where individuals are quoted more than once. Researchers sought the participation of as wide a range of individuals as possible, with special attention paid to economic interest, social class, and race/ethnicity. Discussion topics were developed prior to the fieldwork based upon an extensive literature review and scoping visits to the selected communities. Discussion topics were modified in the field when questions remained unanswered and unanticipated issues emerged. (See Appendix A for a more detailed discussion of the methodology.) Maps of the study areas are in Section 1, Figures 1-2 through 1-7.

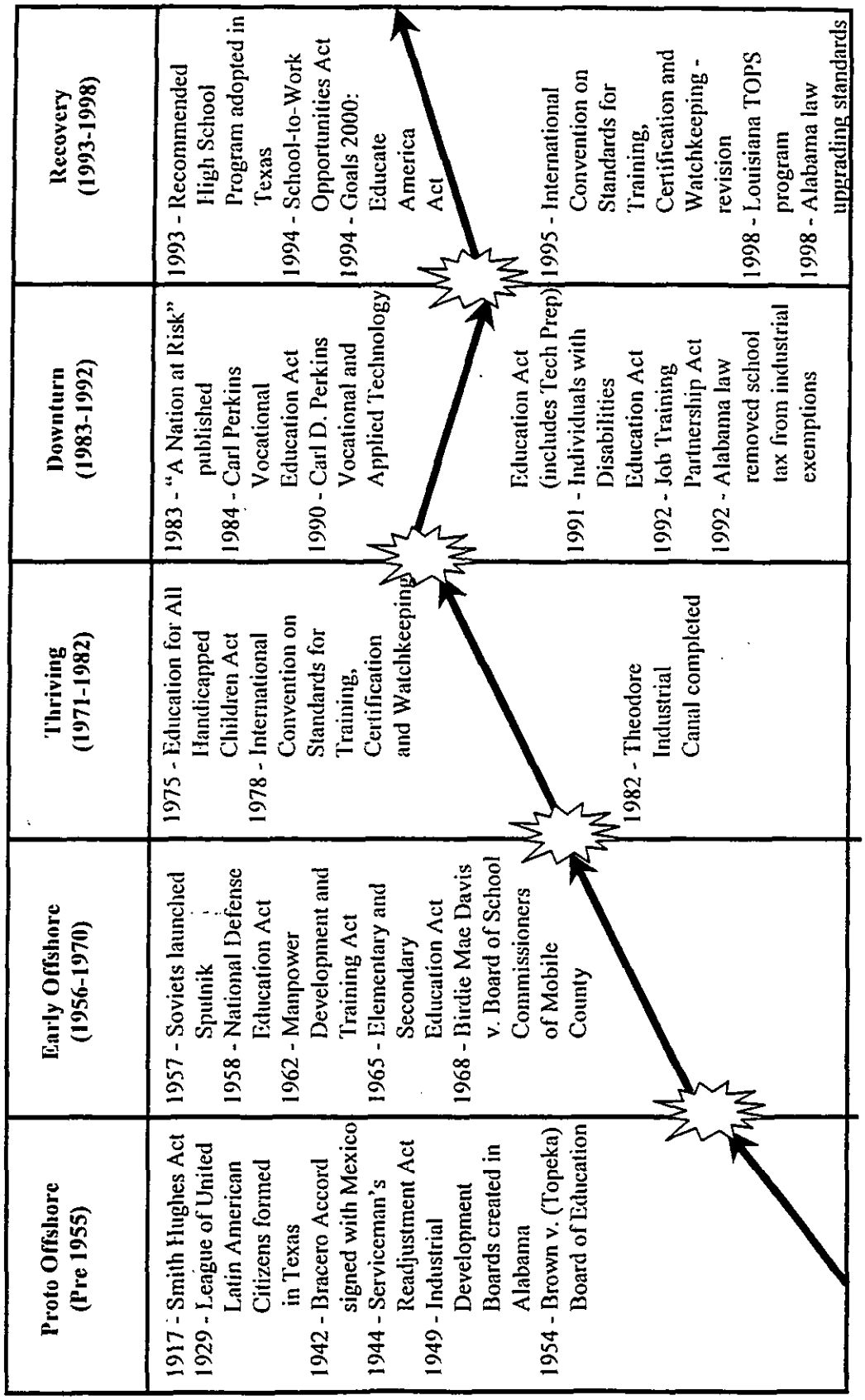

Figure 7-1. Time line of significant national education and labor events and policies.

An ethnographic study aims to look past national and regional trends and to hear individual and community stories. Yet, in even the smallest of communities, there are many tales to be told. Thus, even at the local level, an analysis such as this must look for patterns and generalizations. Nevertheless, it also is possible to take a peek at some of the idiosyncracies. What is presented in the text, in the discussion and in quotes, has been selected to illustrate both the common elements and the diversity of the stories. The statements in quotations are either verbatim quotes from transcripts of taped conversations or near-verbatim comments from detailed notes taken during a discussion. Words or phrases that have been added to increase clarity have been placed in brackets. Information that was summarized during or after a conversation is incorporated throughout the remaining text. Specific newspaper articles are cited only when they offer a unique perspective to the discussion.

There are many facets to the evolving relationships between occupation and education in the communities under study, and some of them are presented here. To facilitate the discussion, the communities have been matched according to their unique patterns of development. The six communities are paired according to their evolution since World War II: (1) coastal communities that incorporated heavy industry into seafood and agricultural economies (south Lafourche, La. and Ingleside/Aransas Pass, Tex.); (2) interior communities that incorporated heavy industry into largely agricultural economies (Theodore, Ala. and Schriever, La.); and (3) communities with no heavy industry (Mathis, Tex. and south Baldwin, Ala.). All six communities experienced labor shortages and economic shifts that affected occupational choices, and these, in turn, impacted educational programs. For this analysis, the community stories have been organized according to time periods that mark occupational changes. Within each pair of communities with similar economic patterns, one community is described at length and the other is included for comparison at the end of the discussion. This section's organizational structure provides a framework within which to examine issues of occupation and education because the typology highlights the relationships between the two while preserving the community context.

Within each time period, the discussion centers around several themes: (1) the circumstances of work; (2) the evolving relationships between work and education, including the evolution of vocational education and school-to-work programs; and (3) social dynamics, including differential access by race and ethnicity. Patterns of residence and work emerge from the economic, demographic, geographic, and cultural characteristics of the communities. Though previous studies of social and economic impacts of OCS activities in the Gulf have treated all residents alike (see, for example, Seydlitz et al., 1993; Seydlitz at al., 1995a; Gramling, 1995; Gramling and Reilly, 1980; Brabant, 1984), there are differences both between and within communities. For example, the stories of individuals and families involved in fishing and trapping who adapted to a lifestyle wherein workers were absent for extended periods of time can be contrasted with those of persons involved in agriculture who rarely, if ever, left their farms. Likewise, many Cajuns and members of other groups, such as the Houma Indians, have been reluctant to move their families away from their communities, but educated citizens, especially African-American and Houma individuals, generally have had to leave to

find job opportunities commensurate with their skills. This section explores the differences and identifies patterns where possible.

Because much of what has occurred in these communities has been the result of Federal and State policies, integrated into each subsection is a summary of those policies and their relevance to the study. Additional details are provided in text boxes throughout the section. The six community field sites were selected to include communities at the heart of OCS activity and at varying distances, both geographic and economic, away from the center. Because the purpose of this study is to explore how OCS activities have impacted Gulf Coast communities, the section begins with the communities most affected. While the history and development of offshore oil and gas activity is in itself a fascinating tale, as indicated above, it is part of a larger story of industrialization and globalization. Thus, the section concludes with a summary and discussion of the evolution of education and work for the decades between World War II and the present, the influence of offshore oil and gas on this evolution, and a comparison to other places along the coast, within the United States, and elsewhere in the world.

Box 7.1 Education and Occupation in the South

The Gulf Coast communities within Texas, Louisiana, Mississippi, Alabama, and Florida have many characteristics of southern communities in general (see Section 2). This is particularly true with regard to education, where racial segregation overshadowed all other issues in the evolution of public schools and the communities surrounding them. The segregation of black and Hispanic populations in Texas had long served to control the nature and extent of the education people of color received and ensured they remained productive laborers. Few places were able to provide quality education to more than isolated groups of nonwhite students (e.g., Bond, 1969; DeVore and Logsdon, 1991; Dauphine, 1993). Though varying in scope and intensity, conflict and hostility resulted from southern efforts at desegregation. The most widespread and effective white resistance to urban integration was the exodus to suburbs and rural areas (Roland, 1975). At the same time, segregationists created segregated private schools, provided public funds to students attending them, and removed even more white students from the public schools.

In 1983, the publication of A Nation at Risk *(United States National Commission on Excellence in Education, 1983) demarcated the beginning of the most recent period of school reform, during which a spate of Federal policies were born, complemented in many cases at the local and State levels.*

> *Reformers had been at work for decades, but in the early 1980's they became increasingly preoccupied with the effects of the inadequate education of U.S. workers on the nation's economy - a development that coincided with increasingly competitive economic challenges from Japan, Germany, and other European countries. (Bailey, 1995)*

After the Civil War, the South faced the major problem of putting 4 million former slaves to work, wanting to keep blacks in the region as a valuable labor force and fearing their erstwhile bondsmen would no longer toil in the fields, or at least not as conscientiously as before the war. But race was not the only concern of white planters, merchants, and industrialists. As the South's agricultural economy struggled to regain its prewar prosperity, whites who owned relatively small farms or who worked as tenants succumbed to tight credit, high interest rates, and the declining price of staple crops, especially cotton. Hard times on the farm coupled with the highest birthrate in the nation, produced a white labor surplus, and leaders worried about the political and social impact of such a footloose class of citizens. The Populist uprising, originating in Texas in the late 1880's and spreading through the rest of the South by the early 1890's, confirmed the worst fears of white leaders.

In the hopes of gaining political stability and economic development without social change, white leaders devised three strategies. First, they secured disfranchisement to remove the black political threat, a threat that became reality during the Populist period. Second, white leaders strengthened and codified Jim Crow to ensure control over the African-American population and to emphasize the superiority of whites. Exclusion accompanied segregation as traditionally black artisanal work became increasingly white and blacks found themselves confined to a narrowing range of economic opportunities. Third, with blacks removed as a political force and limited to menial occupations, white leaders could devise a separate and unequal educational system that would provide only the basics to black children stressing the work ethic and honing minimal agricultural and homemaking "skills" suitable for the blacks' place in the southern economy and society.

As for working-class whites, leaders made an implicit pact reserving many of the newer industrial jobs for them in exchange for white solidarity on the job and at the polls. The cleansed electoral process, which stressed literacy as a key criterion for voter registration, would also remove recalcitrant whites from voting lists. But in order to provide a measure of legitimacy to the new voting regulations, white leaders felt compelled to expand the meager system of public education for whites after 1900. Thus, the South experienced the phenomenon of vastly increased expenditures for public education during the first two decades of the twentieth century while racial disparities widened dramatically. The ratio of white to blacks students enrolled in school ranged from 4 to 1 in Alabama and Louisiana to 1.6 to 1 in Texas (Anderson, 1988). Southern blacks, effectively eliminated from the political process, could no longer pressure elected officials to apply funds more equitably (Margo, 1985).

The results of these policies established black-white differentials in work and education, disparities in work and education between rural and urban districts, and economic and educational deficiencies compared with the rest of the urbanizing and industrializing nation. These disparities would persist, as the subsequent sections indicate, through the 1990's.

Black-white differentials in education funding and attainment reflected differing expectations of work. From 1900 onward, black and white school enrollment diverged considerably. In 1900 only 36 percent of black children in the South attended school, and 86 percent of those pupils attended school less than 6 months a year. One reason for the poor attendance was the necessity and availability of employment for black children. In 1900, 49.3 percent of boys and 30.6 percent of girls between the ages of 10 and 15 were gainfully employed. A second reason for poor school attendance among black children was that they had fewer schools to attend. Even most cities in the South lacked high schools for blacks into the 1930's; as late as 1920, 95 percent of the South's black children did not attend high school. For elementary schools, only the intervention of northern-based foundations and the hard work and penny-pinching of black families contributed significantly to school construction between 1910 and the 1930's. It was not until 1935 that a sufficient number of elementary schools existed in the South to accommodate a majority of the region's black children (Anderson, 1988).

White leaders feared that abysmal educational opportunities for blacks, especially in the rural South, would result in lost labor, either to southern cities or to the North, so the situation improved somewhat. As one educator noted in East Feliciana Parish, Louisiana in 1926, "the parish must provide better schools and longer terms or the exodus of Negroes will continue, perhaps at an increasing rate" (Foote and Robertson, 1926). The ambivalence of white southern leaders toward formal education reflected contentious issues of race and class, as well as the dependent nature of the regional economy which grew or manufactured raw products for finishing, export, or consumption elsewhere. The demands of an agricultural economy and the selection of work over education as a means to a livelihood showed itself in a shorter school year, including scheduling to ensure that school did not interfere with agricultural harvests, and lower capital expenditures per pupil (Pierce, 1955; Link, 1999). The disparities were evident in the workforce, with the South leading the North in unskilled workers and farm owners and tenants (Porphet, 1945).

Consequently, even if a stellar school system existed, graduates would most likely leave the region to find appropriate work and compensation. The South's greatest export from 1900 to 1970 was its people. A cursory review of Who's Who in America *from the 1930's to the 1960's indicates that a majority of southern-born individuals noted there resided outside the South. The North's educational system supported and fueled a more complex economy. In the North, education was a necessity; in the South, some still considered it a luxury. In the 1940's, Georgia's Governor Eugene Talmadge trivialized public education because "It ain't never taught a man to plant cotton." A study conducted during the early 1950's discovered that of every 100 children entering the first grade in the South, little more than 10 graduated from high school (Bartley, 1995). The draining of ambitious and skilled people from rural areas and small towns in the South has been a persistent problem during the twentieth century.*

A vicious cycle emerged: a struggling educational system, rife with racial and class distinctions, supported a struggling economy that did not require high educational attainment which, in turn, justified maintaining rudimentary support for schools. Until the late twentieth century, the lack of formal education contributed to economic development as white leaders "sold the South by touting a relatively docile, non-unionized, hard working labor force, the absence of prickly legislation to curb corporate, economic, environmental, or social policies, and a low tax base that would provide enough services for the business or industry to function properly but at a level that would not erode profits. The predominantly rural character of the South until after World War II contributed to the problem. Urban school systems fared better, reflecting the diversity of the economies that supported them. Into the 1940's, the one-room school was still the landmark of the rural South, and taxation for the support of rural schools produced considerably lower revenues than amounts available in cities. In 1940, the South spent $26.63 per pupil in rural school districts compared to $46.51 for children in metropolitan counties (Pierce, 1955).

The type of work available and encouraged in the South, and the quality of education required for such work, as well as the social system upon which it rested, generated a widespread suspicion about the value of education in general. To be sure, middle-class parents recognized the importance of educational advancement for their children, and their representatives in State legislatures supported adequate higher education, especially in Texas, North Carolina, and Virginia. But, for the most part, elementary and secondary education generated ambivalent attitudes among southerners, even among those most likely to benefit from enhanced educational opportunities. While some white Progressives fought for compulsory school attendance laws, a phenomenon uncommon in the South until after World War II, rural parents fought equally hard against such legislation, as they did against curricular, textbook, and health reforms handed down by urban-based professional educators. The result, as historian William A. Link noted, was that rural southerners "were largely successful in maintaining community control of schools, and also in consigning themselves to a continued second-class existence" (Link, 1999).

Southerners also expressed ambivalence toward independent inquiry and what might be termed "the intellectual enterprise," which compromised their views of the value of formal education. Historical verities such as white supremacy, the Lost Cause, and prescribed and proscribed gender roles were not to be challenged or questioned during the first half of the twentieth century. Southern journalist, W. J. Cash wrote in 1929 that "A thinker in the South is regarded quite logically as an enemy of the people." (Clayton, 1992).

Religious attitudes reinforced secular suspicion of formal education. Evangelical Protestantism emphasized the inerrancy of the Bible. The received truths of history blended with the divinely-inspired truths of Biblical text to abjure doubt, inquiry, and ambiguity. These attitudes extended to the use of textbooks, the hiring of teachers, and the extent to which local educators permitted outside influences to enter the classroom, a process which continues to the present. In the late 1980's, for example, the Bay County, Florida school

board banned 64 books, including works by Shakespeare and Sophocles, that they deemed to contain obscenities. The superintendent said he "hopes to restore Christian values" to the school system (Southern Exposure Staff, 1988).

This, then, is the historic burden of education and work in the South. The educational system supported the caste and class systems of the region, and the economy offered employment suitable to the limited objectives of education while sustaining racial and class hierarchies. None of this should imply that, until very recently, the South was a dismal colonial outpost of basic and extractive industries and related economic activities. The Research Triangle Park in North Carolina and the Silicon Hills of Austin, branches of computer firms such as IBM and Apple, and a myriad of other high-technology and professional services activities reflect the growing complexity of the southern economy. Yet, many of the most technical jobs continue to be filled by outsiders, Sunbelt prosperity is confined to selected southern metropolitan areas, and the region's historical ambivalence and occasional hostility toward formal education clashes with the growing recognition for the value of a solid public educational system.

The coastal communities also shared many other characteristics of the South. The increased birthrate of the period following World War II created new demands for teachers, schools, and educational materials, and the movement to consolidate rural schools that had begun before the war peaked soon afterward as roads were paved and school buses put into service (Roland, 1975). By the 1970's, Gulf Coast communities, like the rest of the South, had modern school systems. Unlike much of the South, however, the isolated communities along the Gulf Coast, particularly the bayous inhabited by Cajuns and Native Americans, did not share until recently the southern faith in education that developed after World War II (see, for example, Powdermaker, 1993).

In addition, like many in the United States, communities along the Gulf Coast were significantly impacted by the end of World War II and the return of soldiers who had experienced a world outside the South. As shown in Section 6, many communities were directly impacted by the presence of military bases up and down the coast. Those impacts remained whether the bases were expanded, downsized, or closed. Of great significance to all communities have been the pervasive impacts of the return of soldiers who had been exposed, often for the first time, to new social and technological conditions. Both black and white servicemen were influenced by living and working outside the South where segregation by race was greatly diminished. Also, World War II made high technological demands on military and civilian populations. Servicemen were trained as operators and technicians of increasingly complex mechanical devices. At home, the war provided justification for widespread commitment of resources to training and employing industrial workers in the city and more efficient agricultural producers in the rural areas (Thompson, 1973). The confluence of military activity and oil resources led to significant impacts along the Gulf Coast.

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Box 7.2. Vocational Education

The most explicit link between industrialization and education is vocational education. Vocational education, or "voc ed," has been defined as "an institutionalized set of relationships embracing both the educational system and the labor market" (Thompson, 1973). One aim of vocational education is to meet the needs of local business and industry, so tracking its patterns provides a lens on the evolution of work in a community (see Prosser and Quigley, 1949; Swanson, 1966; Thompson, 1973;, Lazerson and Grubb, 1974). Several pieces of Federal legislation provided financial support for colleges of agriculture and mechanical arts (e.g., the 1862 Morrill Act which provided land grants to States to sell for endowments, the 1887 Hatch Act which provided support for agricultural experiment stations, and the 1914 Smith-Lever Act which created the Cooperative Extension Service). Vocational education was first legally defined in the Smith Hughes Act of 1917. The Smith Hughes Act established that people would be trained for occupations for which society had a need and provided the first funding to high schools for training in agriculture, home economics, trades and industry, and teacher training. Through a half dozen acts over the next 30 years, vocational education was expanded both in size and scope.

In 1944, Congress passed the Servicemen's Readjustment Act, which included the GI Bill of Rights and funding for veterans for training for a new job, trade or profession, or for enrolling in an approved educational program. That initial GI Bill, and those that followed later wars, had tremendous repercussions for both education and work. These laws were established to compensate veterans for their service and reintegrate returning servicemen into the civilian economy. The GI Bill has been lauded as one of the most successful U.S. experiments in socioeconomic expansion and a "silent revolution," credited with transforming college campuses and creating a new suburban society in a predominantly middle-class nation (Bennett, 1996). Several laws increased funding for and expanded vocational education in the next dozen years, but none had the impact of the GI Bill (Clark, 1998).

The next major educational policy initiative was the National Defense Education Act of 1958, which was passed in response to the Soviet launch of the space satellite, Sputnik. This act led to increased emphasis on mathematics, science, and foreign languages and the training of skilled technicians with the hopes that more U.S. students would pursue scientific and technical careers. In the early 1960's, attention shifted to concern about high unemployment and the mismatch between jobs and the people available to do them. In 1962, through the Manpower Development and Training Act, in response to changing workplace needs and the desire to separate education from specific skills training, the Federal government established the first program specifically to retrain unemployed workers for occupations where shortages existed. The 1963 Higher Education Facilities Act broadened vocational education opportunities by providing resources to further expand vocational education by adding programs and serving students of all ages, and to provide part-time employment for students

participating in vocational training. In 1965, Congress passed the comprehensive Elementary and Secondary Education Act which, among other things, directed Federal aid toward programs for economically disadvantaged children with the aim of enabling them to compete educationally with their advantaged peers. Over the next 10 years, several more educational initiatives were passed to provide insured loans for students in vocational education programs, ensure continued funding for vocational education, and reorganize the manpower services for the unemployed, disadvantaged, and undereducated.

By the mid-1970's, attention was focused on ensuring that all students had access to vocational education. In 1975, the Education for all Handicapped Children Act, updated in 1991 by the Individuals with Disabilities Education Act, brought widespread changes to U.S. education by requiring school districts to meet the individual needs of all students, disabled and nondisabled, to the same extent, "though not necessarily providing the same programs and services." The Act includes a reasonable accommodation limitation covering employment and post-secondary and vocational education. The 1976 amendments to vocational education legislation were aimed at overcoming sex discrimination and stereotyping in vocational education programs. To increase resources, school districts began creating partnerships with local businesses, often through an "adopt-a-school" program. These programs focused on the provision of material goods, such as certificates and prizes for successful students or gifts for teacher appreciation days, and the participation of local employers and employees in school activities as science fair judges, substitute teachers, and tutors. Vocational education generally received no special attention under the "adopt-a-school" programs.

Still, the public critique of the U.S. education system that was pervasive throughout the 1980's affected vocational education and led to changes in educational attitudes and practices. The 1984 Carl Perkins Vocational Education Act specified financial allocations for additional special populations, defined as the handicapped, disadvantaged adults in need of training and retraining, single parents and homemakers, and criminal offenders in correctional institutions. As in the 1976 amendments, a special allocation was included in the act for the elimination of sex bias and stereotyping.

The 1990's saw the continued policy response to the criticism of the 1980's. In May 1990, the U.S. Departments of Labor and Education held the first joint conference to address the connection between education and work. In June of that year, the U.S. Department of Labor published America's Choice: High Skills or Low Wages, which emphasized that more than 70 percent of American jobs would not require a 4-year college education by the year 2000. Then, in September of the same year, the Carl D. Perkins Vocational and Applied Technology Education Act was signed into law. A goal of the Act was "...to attempt to make the United States more competitive in the world economy by developing more fully the academic and occupational skills of all segments of the population." The Act contains the Tech Prep Initiative which "...provides planning and demonstration grants to consortia of local educational agencies and post-secondary education institutions to develop and operate

a 4-year program to provide a technical-preparation program leading to a 2-year associate degree or a 2-year certificate; and to provide strong, comprehensive links between secondary schools and post-secondary educational institutions..." Tech Prep combines secondary school prior to graduation, higher education, and post-secondary apprenticeships with a common core of math, science, communications and technologies.

The 1990's continued the trend toward eliminating differences in the academic preparation of college and non-college bound students. Both the 1990 Carl D. Perkins Vocational and Applied Technical Education Act and later the School-to-Work Opportunities Act of 1994 directed funds to local and State coalitions of industry and business leaders, educators, and parents to develop locally based career paths for youth. Amid concerns that schools must better prepare all young people for the workforce by emphasizing so-called "soft" and "employability" skills, the new policies aimed to integrate academic and technical education. School-to-work focuses on age-appropriate career exploration at all stages of a child's education and includes the requirement that all students develop a career plan prior to entering high school (Stern et al., 1995). Beginning in kindergarten, students get the basics in English, math and science, but also are shown a wide variety of career possibilities. Continuing through middle school, high school and post-secondary education, students also take part in a variety of work-based learning opportunities (Orr, 1998). These pieces of legislation were the result of active participation by industry and business leaders and can be expected to have the greatest impacts in communities that were predisposed to the creation of such partnerships prior to its passage. Community size, the types and size of the businesses and industry present, and the existing relationships between the businesses/industry and the community also will affect program outcomes. As one analyst noted:

> *In the past decade diagnoses of deficiencies in the U.S. education system have led to a reform strategy generally referred to as school-to-work transition. Although the strategy includes many components, work-based education is a crucial element. Work-based education involves exposing students to real work in real workplaces, but it entails much more than simply providing them with work experience. After all, many teenagers hold jobs while in school, and many reformers believe that these jobs have little educational value. School-to-work strategies call for a planned and structured work experience that has productive educational value and is carefully coordinated with the learning taking place in the classroom. (Bailey, 1995)*

Because of the social perception that college is the goal for most, if not all, students and despite efforts to the contrary, attempts to increase the rigor of the high school curriculum have been perceived to be mechanisms for getting more students to college. Passed at the same time as the school-to-work legislation, the Goals 2000: Educate America Act of 1994 addressed the academic curriculum for all students as it called for voluntary national educational standards for core academic subjects and linked Federal funding to State and local efforts to adopt those standards (U.S. Department of Education, 1998). Consequently,

the school-to-work legislation aimed to increase the academic rigor of vocational and technical programs and encourage more students to enter them at the same time that the Goals 2000 programs served to push States to establish college preparatory standards for all. The struggles of schools and communities to respond to these somewhat divergent pieces of legislation can be observed at the local level in the case studies described in this chapter.

Vo-tech programs have a long lineage in the South, dating from attempts after the Civil War to build black educational institutions that would provide a steady stream of semi-skilled labor. Some black leaders such as Booker T. Washington, who built Tuskegee Institute with such objectives in mind, pursued agricultural and mechanical training as a way to uplift the race. But the jobs awaiting Tuskegee graduates and the graduates of similar institutions in the South bore little relation to their training and, most often, required only very basic skills if any at all.

Still, both northern industrialists and southern white leaders supported black vocational education into the twentieth century. By the 1920's considerable white support existed to train blacks as unskilled or semi-skilled urban workers. As one educator noted at the time, "If they were not in school, they would roam the streets" (Anderson, 1988). Thus vo-tech's social benefits loomed as important as its economic attributes. But most so-called "negro jobs" required no schooling at all. Moreover, by the 1930's, as the southern economy sputtered along with the rest of the nation, whites began pushing black workers out of these traditionally black jobs. The disjunction between technical training and the actual jobs available is not only a racial phenomenon, however. States have wrestled with this difficulty for decades.

In 1922, the Louisiana legislature adopted a measure to encourage parish school boards to establish trade schools. It was not until 1931, however, that the first trade school was established in Bogalusa. By 1970, 32 such schools, known popularly as vo-tech schools, existed in the State. But both before and after 1970, significant problems emerged with respect to vo-tech education. Some of these problems reflected historical legacies.
------ end of Box 7.2

7.2 Coastal Communities: Industrialization in Seafood and Agricultural Economies

Many coastal communities relied on maritime activities, supplemented by trapping and agriculture, prior to industrialization, and local trade and barter were important in the regional economy. The communities tended to have stable residential populations with maritime workers who would be absent for extended periods of time. Families augmented their incomes with trapping, farming, and ranching. Some individuals devoted themselves to agriculture full time, but the lack of arable land along coastal marshes restricted large scale agriculture. Given the need to access offshore oil and gas fields and the ready supply of skilled mariners, coastal communities near the offshore deposits were quickly impacted by the burgeoning OCS activity. Indeed, the shift in Morgan City, La.'s annual Shrimp Festival

to the Shrimp and Petroleum Festival highlights the significance of the change. Yet, OCS activity was not an all-powerful force driving community development. As shown in Section 6, shifts in fisheries, markets, and other conditions contributed to the impacts of the oil industry. This section illustrates the inter-relatedness of occupations in coastal communities and the relationship between work and education.

On the whole, shrimping and trapping have declined in the Gulf of Mexico, and, although many individuals still make a living from those activities, many others left those occupations, especially to do oil-related work. In southern Louisiana, the transition from seafood and agriculture to industrial activity occurred at the same time as the rise of OCS activity. In eastern Texas, that transition occurred earlier with the establishment of the first oil refinery in 1928. Regardless of the dates, the communities underwent their own "industrial revolutions" in the years around World War II. Consequently, certain processes occurred that are common to any industrial society. Others, such as the booms and busts related to the oil industry, were unique. For example, economic fluctuations in OCS-related activity affected the expectations of young people and families and influenced decisions about whether or not to participate in the industry.

As described in Sections 2 and 6, factors such as resource depletion, the growth of the recreational fishing industry, and competition from foreign markets combined with the lure of OCS work to lead to a decline in shrimping as a primary occupation of coastal workers. As shrimping declined, some residents recognized that the community's adult workers and youth would need new skills, so they began to encourage formal schooling as the means to acquire them. Others adapted existing skills to work in areas such as servicing the offshore oil and gas industry. Still others hung onto jobs doing the work they knew best. With the decline of OCS activity in the 1980's, many residents faced another occupational shift. Yet, the increased OCS activity of the 1990's has demonstrated that oil is still a major draw.

This section traces the evolution of two coastal communities from World War II to the present. Because these communities have been heavily influenced by OCS activity, the section is organized into five time periods reflecting levels of oil and gas activity: (1) proto-oil (prior to 1955); (2) early oil (1956 to 1970); (3) thriving oil and gas (1971 to 1982); (4) downturn (1983 to 1992); and (5) oil and gas recovery (1993 to 1998).[1] Each subsection highlights patterns of economic and social organization, work and education, and race and ethnic relations. The community of south Lafourche, defined as the catchment area for South Lafourche High School, is the focus of this section (see Figure 1-3 and the communities of Port Fourchon, Golden Meadows, Galliano, Cut Off, Raceland, Larose, Thibodaux, Houma,

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[1] Four stages of oil and gas development were identified from the statistical analysis used in Sections 4, 5, and 6. These time periods are not in conflict with each other. They merely reflect periods defined using different methods and in greater or lesser detail.

and Grand Calliou). Because south Terrebonne Parish, Lafourche's neighbor to the west, has a history very similar to and intertwined with that of south Lafourche, some information about south Terrebonne will be included in this section. A discussion of the Coastal Bend area of Texas, specifically the catchment areas for Ingleside and Aransas Pass High Schools, is included at the end of the section for comparison.

7.2.1 Proto-oil Period (Pre 1955)

Commercial fishing began to be important to the Gulf Coast economies in the nineteenth century. However, it was in the 1940's that Cajun shrimpers moved into Texas gulf waters and commercial shrimping emerged. Around the same time, the big oil boom occurred along Bayou Lafourche. This story begins then.

Section 6 describes the land use patterns in the area and the isolation of Bayou Lafourche communities. Although agriculture was a principal economic activity in Lafourche Parish until the discovery of oil, that activity, especially sugarcane farming, was concentrated in the central and northern parts of the parish. Maritime activities dominated the southern parish communities. The shift of economic strength and political power from the north to the south is one of the legacies of offshore oil and gas development.

Of significance in the history of south Lafourche Parish is the peculiar geography of the bayou country that reinforced the isolation of residents and the tendency to stay close to home. Prior to World War II, an ethnically diverse mix of people had found its way to south Lafourche Parish. By the war, however, the most prominent groups were Cajuns and Houma Indians. Until marsh land became a valued commodity with the discovery of oil, the location of arable land was a key factor in community organization. Among the Cajuns, only residents with historic ties to the community owned sections, measured in the French arpents, upon which they lived and practiced small scale cultivation. Upon reaching adulthood, children would build their homes on the family land, with each generation moving farther from the bayou and toward the marsh. Most families had their own small cattle herds to provide meat for their families, and the cattle ran free. Those who did not want the cattle on their property had to fence them out. The Houma Indians, known locally as "sabines," were concentrated in several small communities along the bayous of south Lafourche and Terrebonne parishes.

Several merchants developed small stores up and down the bayou because the difficulty of transportation made centralization impractical. Net shops, shrimp shacks, and grocery stores grew up. Barter remained the basis for the local economy with money used to supplement life's basic necessities. Such practices were typical of rural and small-town settlements in the South during the first half of the twentieth century. Their residents, tied together by close family networks, engaged in economic activities that brought them into the market at various times, but the primary economy and means of subsistence was local. At a later time, when market forces, both from inside and outside the South intruded into these communities, greater prosperity occurred even if only for the short term. Out-migration and a loosening of

kin networks also characterized these transitional settlements. Frequently, suspicion of urban-based, government-employed outsiders resulted in resistance to reforms that might have improved community life, particularly in the areas of public health and public education.

Before World War II, Lafourche Parish was a classic southern Louisiana shrimping community. Trawling and trapping were seasonal occupations, and most families engaged in both, taking their shrimp boats into the gulf in the spring and early summer and then following their trap lines in the fall and winter. Not all families owned shrimp boats, but all were influenced by shrimp's seasonal cycles. Successful families accumulated wealth and built more and larger boats. Others scraped by or lost their boats and went to work for their neighbors. Prior to the 1940's, swamp land was available to all to use for trapping and fishing. Initial efforts by outsiders to purchase land, especially swamp land, went unnoticed and unchallenged. Until recently, many residents believed the Louisiana Land and Exploration Company was a Louisiana company. According to the company's 1928 annual report:

> The Louisiana Land and Exploration Company, a Maryland corporation, was organized in 1926 as the Border Research Corporation and the present title was assumed in 1927.... Of the more than 2,000,000 acres in the State of Louisiana, over 1,000,000 have been explored for the Company by the Geophysical Research Corporation, a subsidiary of the Amerada corporation. The latter indirectly owns a substantial interest in The Louisiana Land and Exploration Company. (LLEC , 1928).

A November 12, 1928 contract with the Texas Company (which became Texaco), approved by the Governor of the State of Louisiana, gave the Texas Company exclusive right to prospect, drill for, and produce oil, gas, and sulfur on properties in Louisiana held by the Louisiana Land and Exploration Company. The low literacy and segregation of the local population prevented this information from reaching local residents. This situation reflected a typical historical pattern in the South experienced by those who followed the timber boom of the late nineteenth and early twentieth centuries, as well as coal mining in Appalachia. The benefits to the local community and its residents were limited as local and outside elites captured most of the profits from extractive industries. Several individuals recounted the impacts on the Indian settlements:

> One time in Leeville, surveyors came in to open Bayou Blue to the gulf. They asked around, looking for the landowner, and the people told them to talk to the Indians. There were lots of Indians back there. Louisiana Land and Exploration paid them $0.05 an acre. They put in lots of oil rigs, and the people got nothing. [LA-MN-010, retired Cajun oil worker]

> For us here, we had the settlement school. My dad is one who had a seventh grade education. He tells stories of what it was like for him down south. The Indian settlement was below the corporation limits of Golden Meadow. They had a grocery store and church in that one little strip of bayou for a couple of miles. He remembers guys coming into the store talking about how you can't let the Indians become educated or you can't take their land. We were not allowed in public schools until the 1960's. [LA-DA-042, Houma educator]

The isolation of the community, combined with the social expectation that individuals maintain family and community ties, also meant that, prior to World War II, few individuals migrated out of south Lafourche Parish. Even in hard times, residents were more likely to stay put and make things work than go elsewhere. Many of the migrations that did occur involved groups of families who left together. In the 1940's, for example, when many Cajun shrimpers took their boats into Texas waters, several families moved en masse to Texas and settled on the State's eastern shores and bayous.

Despite the early oil discoveries, the big oil boom did not occur in south Lafourche Parish until after World War II when the materials and labor that had been diverted to the war effort could be directed to the oil industry. During that first boom, local residents had no experience working in the oil patch, so the early workforce consisted of Texans and Oklahomans who had gained experience in their State the previous decade. Both the Cajuns and the Houma Indians who occupied the area were well acquainted with persecution and discrimination, and that, combined with the virtual absence of transportation systems from the coast inland, led them to avoid interaction with outsiders. Until the oil boom, few newcomers had ventured into the area, and, even with the boom, fewer were given the opportunity to settle there.

Cajuns coined the term "Texians" for the foreigners who came from Texas to work the oil fields. The term is still used today to describe anyone from outside the community. There was no land for the Texians, and they were not particularly welcome. The majority of newcomers were better educated than local residents and received the better jobs, and this led to resentment toward them. Nevertheless, their arrival brought money to the local economy. Local residents rented them homes and worked for them as domestic servants. Soon, oil rigs were sprouting up all along Bayou Lafourche. Local residents still remember the presence of oil rigs in the school yard, and the high school yearbooks proudly displayed an oil derrick on their covers (see Figure 7-2). According to one student of that time:

> I remember when I was a kid, we'd get out of school at least once a year because of problems in the oil field. The oil field was like all around us, all around us. We just learned to live with it and were glad to have it because it gave our people jobs. When I was in the fifth or sixth grade [around 1949], there was a huge tank explosion just outside our school yard fence. It burned for about 3 days. There was all this black smoke. Also, they couldn't grow grass on our football field. It was a former oil field and the grass wouldn't

grow because of the paraffin. We had derricks in the bayou. They were more or less located all around the school. [LA-DA-038, retired Cajun educator]

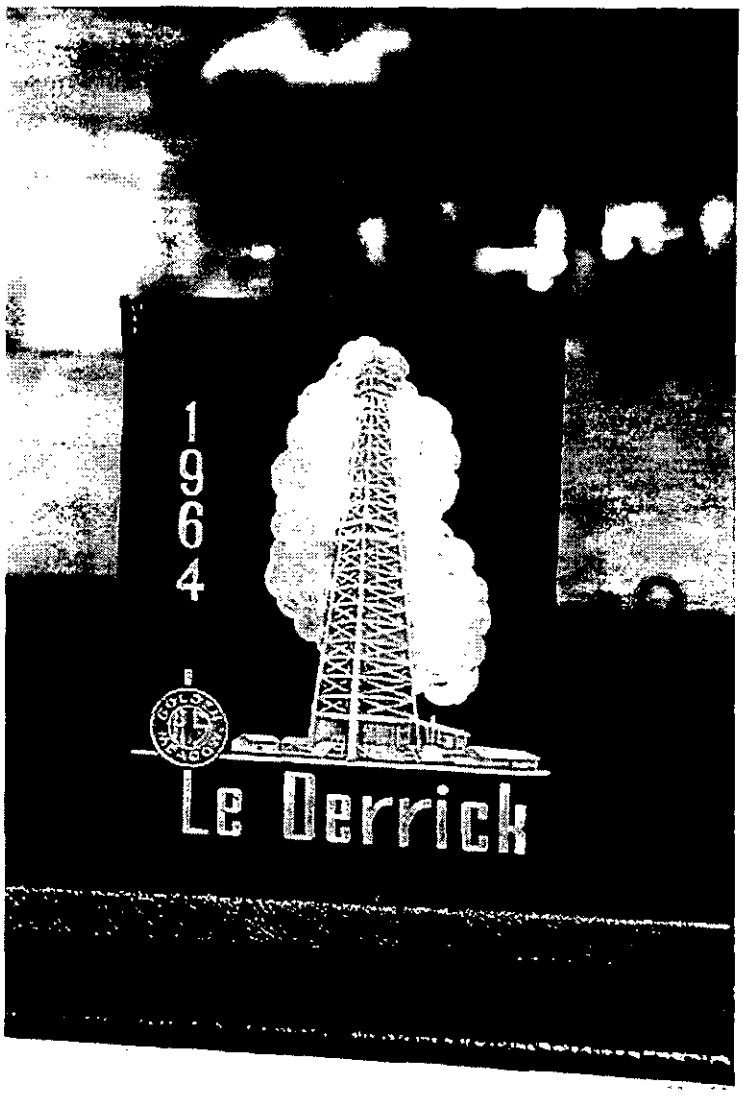


Figure 7-2. South Lafourche High School 1964 yearbook cover.

The Texians soon discovered that Cajun maritime expertise could be put to use servicing platforms up and down the bayous. Beginning in the mid to late 1940's, some enterprising shrimpers found ways to convert the storage hulls of their wooden trawlers into cargo holds to haul supplies to the rigs that were being set up in the marshes.

> My dad was a shrimper and a trapper. He made the move going into the transportation business in the mid '40's...[In 1952], my dad was in the boat business and worked for oil companies. My dad had luggers to bring in supplies and provide transportation. All the needs of the oil companies were met by luggers. The luggers were wooden boats that could make relatively short runs. They were small compared to [the boats running] today. The luggers were converted shrimp boats in most cases. The original shrimp boats in this area had the cabin in the rear and the hold in the front. The shrimpers built a cover over the hold in the front and used it for supplies. [LA-DA-010, retired Cajun educator]

Like other aspects of parish life, the Lafourche educational system was dictated by geography (Miller, 1933). Louisiana school districts were created with boundaries coincidental with parish boundaries. Lafourche Parish was one of the first to set up a school board which organized and established schools beginning in the 1870's, but public education did not really begin in the parish until 1906. Even then, the schools were located in and around Thibodaux in the northern part of the parish. By 1933, six approved senior high schools served Lafourche Parish; the farthest south was in Cut Off. A school in Golden Meadow was seeking State Department approval (Miller, 1933). In the decade following World War II, Lafourche Parish's public school system grew dramatically, in tandem with the parish economy, and more schools began to appear in south Lafourche. In response to an increase in the birth rate following the war, school populations jumped each year after 1950 (see Figure 7-3).

In the late 1940's, a major consolidation of schools, and a bond issue to enlarge and improve school facilities, were the only real options available to the schools to deal with growth and change. From 1946 to 1959, parish residents passed four bond issues totaling $11,270,000 (Hanley, 1964). The State of Louisiana settled a lawsuit with the Federal government over offshore royalties and set up a trust fund, known as the 8g fund, which was designated for education. Money from the lawsuit was put into the fund with only the interest used for innovative programs.

Administrative and teaching positions were filled with military personnel returning from the war, but, well into the 1940's, it remained difficult to find teachers who would live and work south of Raceland, in the central part of the parish. Teacherages were set up and owned by the school board as places for teachers to live. In the words of a longtime Lafourche Parish educator, "If you weren't raised in that area, you probably felt very isolated." [LA-DA-030, retired oil worker]

In addition to the isolation, a teacher probably also felt largely unappreciated. The knowledge and skills necessary for operating and guiding a shrimp boat were learned at sea. Fathers took their sons to sea as soon as possible. Likewise, successful trapping was a result of hard work and knowing where to place trap lines. Entire families would travel together, laying and running trap lines for several months out of the year.

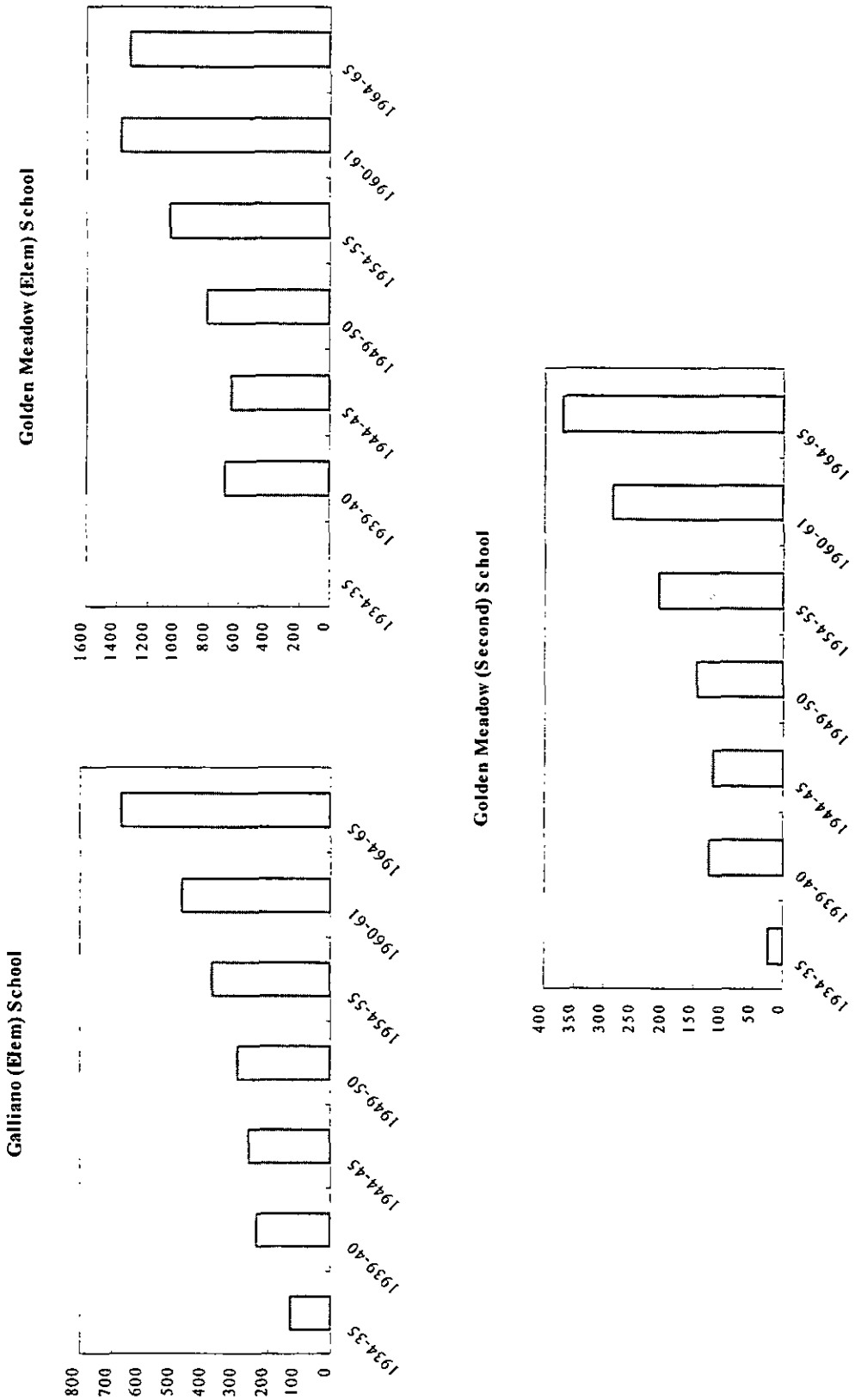


Figure 7-3. Population of Golden Meadow and Galliano schools, 1934 to 1965.

Source: Lafourche Parish School Board, 1997.

> When I was a kid growing up, my dad was a trawler. He trawled May and June. He had the hold in front to put the shrimp and ice up. When trapping season came, he put the cover over the hold.... We used to trap out of Morgan City. We had to buy all our food and belongings. We were gone 3 to 4 months. We would leave school behind. My mom would tutor me. A lot of kids -- the typical child from this area -- would speak mostly French when we started school. I was probably the only child who was bilingual when I started. My mom spoke only English to me so I would know English. [LA-DA-010, retired Cajun educator]

Women supported the economic enterprises, and girls learned from their mothers. The lack of any perceived need for formal schooling, the economic necessity of taking children out of school for shrimping or trapping, a language and culture different from that of the teachers, and the distrust of outsiders meant that there was little support for formal schooling during the period. Again, this was typical of most small towns and rural areas of the South at this time.

Yet, as a middle-aged participant stressed, an absence of formal schooling was not viewed as a weakness within the community:

> This community is self-educated. I don't mean formal education. We have lots of millionaires. Many couldn't read, but they understand basic concepts. My generation, the children of that generation, were encouraged to get an education. Now [the older ones] are passing on the businesses. Here in this area, it's a very tight knit group. We have a very big respect for the wisdom of our parents. They were not looked down upon for a lack of formal education. We look in awe at what they were able to accomplish without education. [LA-DA-034, shipyard owner]

Many Cajuns and other francophones settled along Louisiana's bayous seeking refuge, and children were taught early to mistrust people who did not speak French. Their attitudes toward nonfrancophones and toward formal schooling generally did not improve with experience. Stories of rapid and severe punishments meted out for speaking French at school became legendary.

Most secondary schools were only available to the community's "white" students. Lafourche Parish had fewer African-Americans than most Louisiana parishes, and almost none of them lived in south Lafourche. In 1933, the largest school serving African-American students, consisting of elementary grades only, had six of the nine parish teachers for black students and was located in Thibodaux. The parish had one State approved 4-year high school in Thibodaux for black students, although as late as the 1948-49 school year, the school graduated no one (see Figure 7-4). No schools for blacks existed south of Raceland.

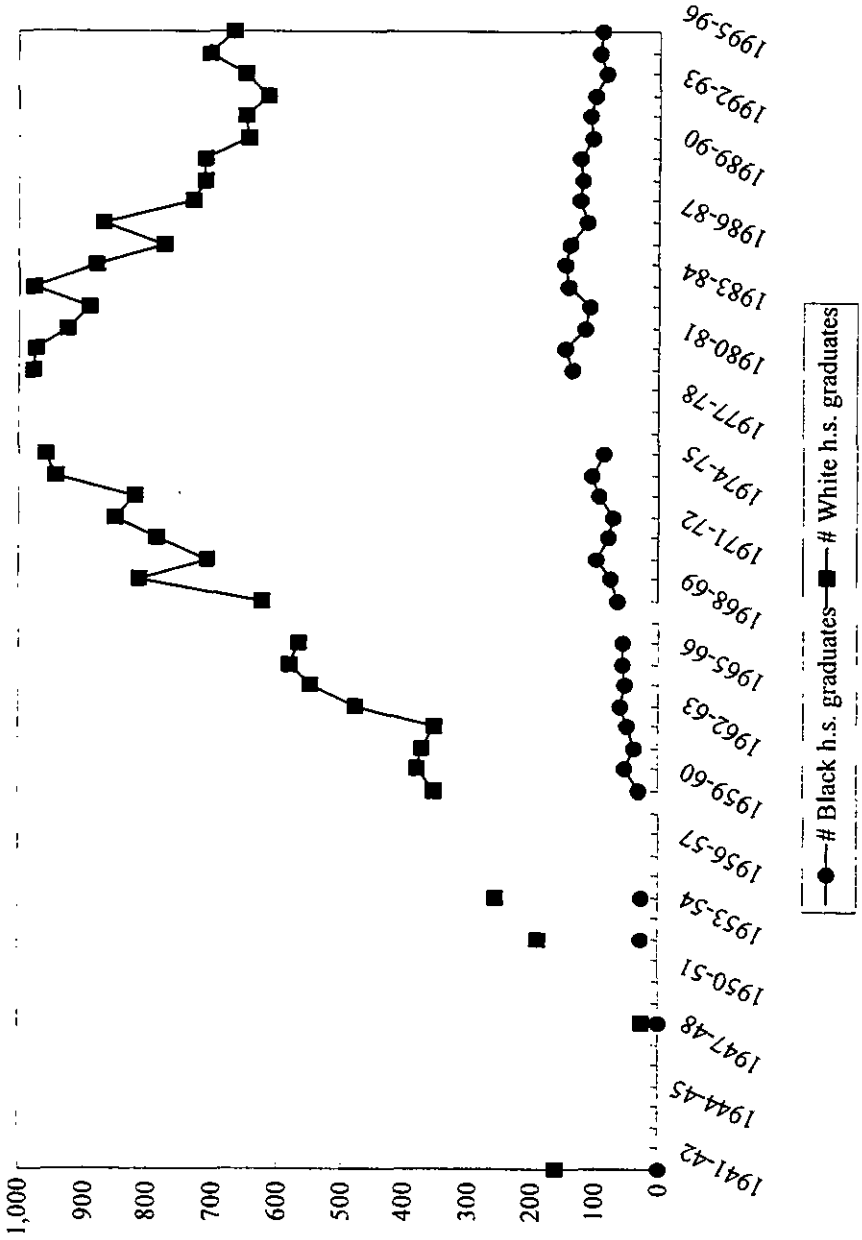


Figure 7-4. Lafourche Parish high school graduates, 1941 to 1996.

Source: Louisiana Department of Education of Louisiana, 1941-1953, 1959-1967, 1968- 1976, 1979-1996.

The Houma Indians spoke French, because, like other tribes, they began incorporating French words into their vocabulary from the time of first contact in the late 1600's. By the turn of the century they had retained little of the Houma language and anthropologists noted, "The Houma are now the most conservative of all Louisiana French speakers" (Kniffen et al., 1987). Houma groups also absorbed and became incorporated into other Indian groups. The local whites' term for the Houmas, "sabines," was derived from the Spanish word for cypress tree or "red-and-white-spotted" (Kniffen et al., 1987). Many Houma settlements were formed by the offspring of Indian and non-Indian unions wherein the residents retained Indian identity. Because of such intermarriages with blacks as well as whites, prominent school officials denied that the Houmas even existed (e.g., the chapter, "The So-Called Indians" in Bourgeois, 1938). They were unable to attend white schools and refused to be classified as "Negroes," so they were largely ignored by the school system. A settlement school was operated for them south of Golden Meadow. Church-run schools were opened in south Terrebonne Parish with the goal of assimilating the Indians, and they required students to speak exclusively in English. The expense of operating the church schools forced officials to turn to public funds, and Terrebonne Parish soon transferred the school to Lafourche Parish (Bowman and Curry-Roper, 1982). The years of discrimination have not been forgotten:

> Sabine, that was the name they used to call Indian children. It was the lowest form of life there was. When we'd go to school, we'd have kids calling us names all the time. My mom worked all the time to make sure we had everything we needed to go to the white schools. One time when I was having trouble, my mom went and had a meeting with the principal. He called us in and looked me in the eye. He said, you're not having any problems are you? I was the type who went home and cried. My sister was the fighter. She never let anybody call us anything. [LA-DA-042, Houma educator]

Only a few students of any race or ethnic group endured school for the 11 grades needed to graduate from high school; only 1.8 percent graduated between 1931 and 1936, and this had only increased to 3.1 percent by the late 1950's (Hanley, 1964). There were no colleges nearby, and few students were able to leave the community and attend college elsewhere. Then, in 1944, legislation to establish Francis T. Nicholls Junior College brought post-secondary education to Lafourche Parish. Despite controversy involving residents of Houma in Terrebonne Parish, and due to the efforts of the Thibodaux Rotary Club, the college was located in Thibodaux (Clement, 1970). The college was built to serve 300-400 students, and 161 students enrolled in 1948, its first year of operation. In 1949, there were only 80 high school graduates in the area serviced by Nicholls and 45 of them enrolled at the junior college. Although the records are sparse, few if any, of these students came from south Lafourche Parish. Lack of transportation to the far north end of the parish and scarcity of high school graduates in the southern part of the parish precluded attendance by south Lafourche residents. By the early 1950's, several parishes, including Lafourche, began offering bus service to the college. The bus was driven by a student who lived in the southern part of the

parish. That individual would begin the route in time to get the students to campus for the first class and would return with the students at the end of the day.

Despite the widespread rejection of formal schooling, some south Lafourche Parish individuals were encouraged to continue into higher education. The desire to remain in the area was strong even among those seeking education. By the 1950's, the burgeoning oil industry offered new possibilities for doing both:

> I left school for 3 or 4 months [to go trapping with my family] till the sixth grade. Then, I wanted to stay, so my mom found someone to keep me. My mom had an eighth grade education. She would set aside time daily to study - religiously. I hated it... My dad never wanted me to work on any of our vessels. He never got a formal education. I was the one who would get an education. [He knew] if I never went on the boats, I would not learn it or get to like it. Education was what my dad never got... So, I graduated in 1952... When I first went to college, I didn't know what I wanted to do. Because of the influence of the oil companies, I thought I might want to be a geologist. Petroleum engineering and geology were good fields for people in this area. Chances were, if I got a degree [in one of those areas], I could remain in the area. [LA-DA-010, retired educator]

Others fought family traditions to get access to schooling. From the earliest days, where oil field work was the desired end for many, some recognized it as the means by which they could earn the money necessary for an advanced education.

> My father's jaw was broken in a fight when I was two. My mom went with him for a week. I stayed with my father's sister. Then, I stayed there and they raised me. I lived about two blocks away from my parents. I never really went back to live with them except in second grade. My dad used to go trapping every year. He forced my aunt and uncle to "let" me go trapping. When I got home, I wanted to go back to live with my aunt and uncle. My aunt and uncle were different. They believed in education. They were no different from my mom and dad in that they were uneducated.... There's the difference in parents believing in education and those who believe you have to go to work.... I worked every summer with oil field people and made my own money to go to school. [LA-DA-038, retired educator]

Vocational education also became available in Lafourche Parish in this period with the 1948 creation of the South Louisiana Trade School by the State Legislature (Act No. 69 of 1948, approved June 23 by the governor). The school was established in Houma to serve residents of Lafourche, Assumption, St. James, St. Charles, and Terrebonne parishes (Windham, 1971). However, post-secondary opportunities were unavailable to non-white residents of southern Louisiana. Louisiana Act No. 69, for example, States the purpose of the act to be

"(t)o create and establish a trade school for the education of white people of the State of Louisiana, in Houma, Terrebonne Parish, La...."

New State requirements for the certification of teachers included at least a bachelor's degree, and the State minimum salary schedule included points for number of years of college training as well as teaching experience. Following the war, adult education gained greater importance, especially due to Federal and State support for veterans (Hanley, 1964). The return of war veterans required national attention, which took the form of policies such as the GI Bill. Black and white veterans returning to the States had fought side by side in foreign lands and many supported greater integration. Yet, in most of the south, the challenges to racial segregation were not readily accepted. Although the celebrated Supreme Court case of *Brown v.* (Topeka) *Board of Education* (1954) abolished the notion of separate but equal that had been established in earlier court decisions (see Box 7.3 at the end of Section 7.2), as in many areas of the South, that decision had no immediate impact on the communities of south Lafourche Parish.

7.2.2 Early Offshore Oil Period (1956 to 1970)

Local residents consider the late 1950's the real beginning of offshore oil and gas in south Lafourche Parish. By then, many Cajuns had learned the business of oil and had added working in the oil patch to their seasonal occupational cycle. Initially, few people gave up trawling or trapping to work in oil. Instead, many individuals began supplementing their regular economic activities with service to the oil industry. As oil moved offshore, residents of south Lafourche Parish became adept at moving between their traditional occupations and the rigs.

As offshore oil grew and developed, converted shrimp boats were no longer sufficient for supplying the new rigs. Consequently, the early 1960's saw a boom in boat building. Some residents began designing specialized vessels to service the rigs:

> My dad converted to a lugger... Then he saw the need for tug boats. He went into the steel boat business. They were built pretty much locally. The largest one was built in Lockport. [LA-DA-010, retired educator]

In south Lafourche Parish, boat operators and builders continued to expand and develop their special niche. Local, family-owned and operated shipyards were established during this period. Though south Lafourche residents also worked on the offshore rigs, the prevalence of maritime expertise there meant that many found their niche on the boats rather than the platforms. For those who worked offshore, the work cycles were measured in days out and days back, with 7 and 7 or 14 and 14 being common.

Although servicing offshore oil emerged as a primary industry in south Lafourche Parish, trawling and trapping continued to play an important role in both the community's economy

and identity. Many local residents continued to use these activities to support their families whenever possible, but the shift from a dominantly barter to a cash economy was underway. This pattern typified communities in transitional economies. For example, during the first quarter of the twentieth century, textile mill workers in the Carolina Piedmont moved between farm and factory on a cyclical basis; income from the factory enabled them to keep their hand in farming and maintain ties with the land and family. The nearby presence of textile mills also allowed families to send one or two members off to the factory to help support the farm. Eventually, however, agricultural downturns, a high birth rate, and continued growth of the textile industry pulled more families permanently into the factories, creating new communities but sundering older ones. More recently, mechanization, global competition, and lower labor costs offshore have thrown this labor force out of the industrial economy and into lower-paid positions in the service economy, again, with resulting dislocations.

One Cajun man described his activities during this time:

> In the mid-1950's we had a big recession. The price of jumbo shrimp dropped. We would leave from here, load up a boat with white trout -- croakers they call them in Mississippi -- and haul them over there. It was quite a run. Then that died out. Quaker Oaks manufactured too much cat food. We tried shrimping, but we could not make a living. I went to work offshore for the oil companies. [LA-DA-011, retired oil worker]

Even with the onset of OCS activity, though, work instability was the rule. From the beginning, offshore work was characterized by (1) tremendous expense that required industry coalitions and (2) rapid technological change that quickly made each new generation of equipment and training obsolete.

> In the late spring of 1957, I got a call we were going offshore to try to put up a tower. It was the first one to be put offshore. We lived in an old Navy landing craft - LCI - Landing Craft Infantry. It was hot in there; there was no air conditioning. We bolted the thing together, but the engineer had not allowed any tolerance so we had to send the bolts back. It was a joint venture by Mobil Oil and Kerr McGee. It was so expensive that they had to go in together. I did that for 4 or 5 years. Then they came up with the jackknives [rigs]. That put us out of business. They only built two or three of those a year. [LA-DA-011, retired oil worker]

As the oil industry grew, outsiders continued to be drawn to south Lafourche Parish. The lack of housing meant that the majority did not became permanent residents, although many were incorporated into the community by marrying daughters of local families. As newcomers' children grew up alongside the local children, interaction among different groups became more frequent. Blacks, however, were still restricted from participating in many activities,

and the Houma Indians remained segregated in distinct neighborhoods located in south Lafourche and south Terrebonne parishes. As others left shrimping to work in oil-related jobs, many Houma people remained involved in shrimping and trapping. Houma women and young people were employed in shrimp sheds. Young people looked for work and were expected to find jobs long before they reached the age of 16.

> Person 1: My mom worked as a bookkeeper for one of the shrimp sheds. She would count how much they unloaded, the ice they bought, etc. Some days you'd sit there forever and wait for the boats to come in. They paid her a set salary, like $100 per week. In the winter time, trapping season started. People would come in. The men would skin the nutrias. The women would tack them on big round boards. They would stretch them and tack them on the boards to dry.
> Person 2: The man would pay us a quarter a day to go put boards out in the sun to dry. We would pick them up after school. When we got a little older, they'd let us take the nails out.
> Person 1: We would go hang out in the nutria shed. It was the horriblest smell. My son did it for awhile, when he was under 16. He did it for a couple of winters. He would go with his grandpa to skin nutria. We still have some Indian moms who do that. You have to be fast. My brother, when he was less than 16, he got a job making nets and dripping them. We were slave labor (laughing). [LA-DA-042, 043; Houma educators]

Trawling and trapping were difficult and sometimes dangerous occupations, and individuals and families involved in them lived with uncertainty. Working offshore was perceived as particularly arduous work, even by those used to the vagaries of working at sea. Although the oil industry became fully entrenched in southern Louisiana lifestyles, few aspired to working on the rigs. Some locals began to feel used by the oil companies and, according to one individual, became "encouraged to improve themselves to compete for the better jobs." [LA-MN-001] Formal schooling was recognized by some as a means to keep up with the changes or to escape difficult labor. Even in families where children continued to work out of economic necessity, the need for education was becoming recognized. Residents who continued past high school during this period described how they came to value education:

> My parents really sacrificed for us.... they saw the value of education even though they never had it. They saw the shrimping and trapping changing. People laughed at my dad because he was willing to give up his trapping leases to take a job on a seismograph crew. My father wouldn't teach me mechanics, how to work on nets, how to get to where the best fishing grounds were. He kept me from my survival culture. The work was seasonal. We would start the whole cycle - alligators - shrimping and trapping - crabs. [LA-DA-053, Houma educator]

This period saw continued growth in the educational system and the positions available to those who obtained secondary and post-secondary degrees. Due to the lack of teachers in south Lafourche, teachers continued to receive free housing in "teacherages" throughout the 1950's. In the 1960's, a diesel mechanics class was begun at South Lafourche High School. It was one of the first oil-related courses offered in the parish, though it was not designed solely for future oil field workers. Local residents began to return to the community as teachers. Persons with high school degrees were able to find local jobs in company offices. For the majority, however, formal schooling remained secondary to direct experience and preparation for work.

A decade after the Supreme Court decision mandating integration in public schools, schools in south Lafourche Parish, like those throughout Louisiana, remained segregated. With no significant black population in south Lafourche, integration focused on the Houma children whose parents had tried to get them into the public schools for years. The only high school open to Indian students in the 1960's was in south Terrebonne Parish. In 1963, an anthropologist working on behalf of the Houma gained assistance from an attorney and, in April of that year, the U.S. District Court ruled that the public schools could not discriminate against Indian students (*Margie Willa Naquin, et al., v. Terrebonne Board of Education*, U.S. District Court, Eastern District of Louisiana, Civil Action 13, 291). As a result, in 1964, Houma students in Lafourche were offered the choice between attending the settlement school or the public elementary school. One individual described how he had the good fortune to be one of the few with the opportunity to go to high school:

> My parents sent me to the Catholic High School. The word was that as an Indian you would spend your life trawling and trapping. You only needed a little education. My principal was appalled that we could not go past the eighth grade. It was a priest that got me on in school. I was in the hospital after a hunting accident. He had been on the bayou for 4 years but did not know we could not go to high school. He was sitting by my bed, making small talk. He asked me where I was going to high school. I told him, "Father, I can't go to high school." He asked why, and I told him Indians could not go past eighth grade. Here was this big old guy who had tears in his eyes. Then he got mad. He went to talk to the principal of the Catholic High School. Brother _____, he was the principal, on the first day he announced over the speaker, "[...], an Indian, will be attending our school. We expect him to behave and for the rest of you to behave..." [LA-DA-053, Houma educator]

In 1965, for the first time, the schools in Louisiana started collecting sales tax. Then, in 1967 in Louisiana, in a series of court cases aimed at eliminating efforts to evade desegregation, the U.S. Fifth Circuit Court of Appeals made it illegal to use State money for tuition grants for students attending private segregated schools. A Federal judge intervened to establish school boundaries and force integration. In 1968, when Lafourche Parish began to integrate and consolidate its schools, new boundaries were set. In contrast to much of the south, due to

the small number of blacks and the weakened political position of the Houma Indians, south Lafourche was relatively unaffected.

> A Federal judge set the boundaries, and they've pretty much remained intact. The bulk of the blacks lived in central Lafourche and Thibodaux. The judge imposed boundaries there. There were no minorities in south Lafourche, so he didn't impose boundaries there. [LA-DA-021, Cajun educator]

The only change was that buses began to run between the tip of Lafourche Parish and Galliano, and, in the elementary grades, parents could send their children either to Galliano or to Golden Meadow. Due to the rivalry among the small communities along the bayou, most parents elected to send their children to the school they had attended.

Parochial schools became popular in the northern part of Lafourche Parish, at least in part in response to integration. A Catholic high school was begun by sisters and brothers who went to Thibodaux in the 1950's and 1960's. There were no parochial schools in south Lafourche Parish, despite the high percentage of Catholics. Many students in Terrebonne Parish were close enough, on the other hand, to attend the Catholic school in Houma.

In 1958, Nicholls became a 4-year baccalaureate granting institution, and one of several degrees first offered at the college was a bachelor's in education. By 1958, the percentage of Lafourche Parish high school graduates who attended Nicholls State College had grown to more than 35 percent, up from less than 10 percent in 1948 (Clement, 1970). Enrollment at Nicholls generally climbed throughout the 1960's (see Figure 7-5), but the percent of high school graduates attending the college stayed the same because high school graduation rates increased at the same time. College education was touted for its contribution to economic growth of the Thibodaux area (*Nicholls Worth*, October 17, 1957, cited in Clement 1970).

Clearly, by 1970, the occupations and educational experiences of south Lafourche residents had changed. Though for each individual family the changes often were small and gradual, collectively they established the basis for the dramatic transformations of the next decades.

7.2.3 Thriving Oil Period (1971 to 1982)

The offshore oil industry continued to prosper, and south Lafourche grew right along with it. With oil thriving, almost everyone in south Lafourche was making money -- deckhands, boat captains, roughnecks, and construction crews. For more and more residents, offshore related work, especially in building, servicing, and operating boats, became the dominant source of income. Following existing sociocultural patterns, deckhands might live next door to and socialize with the shipyard owners. Due to the relative scarcity of cash in the local economy prior to oil, those who began earning money in oil-related work soon prospered. Many got rich, and they initially did not separate themselves from the remainder of the population.

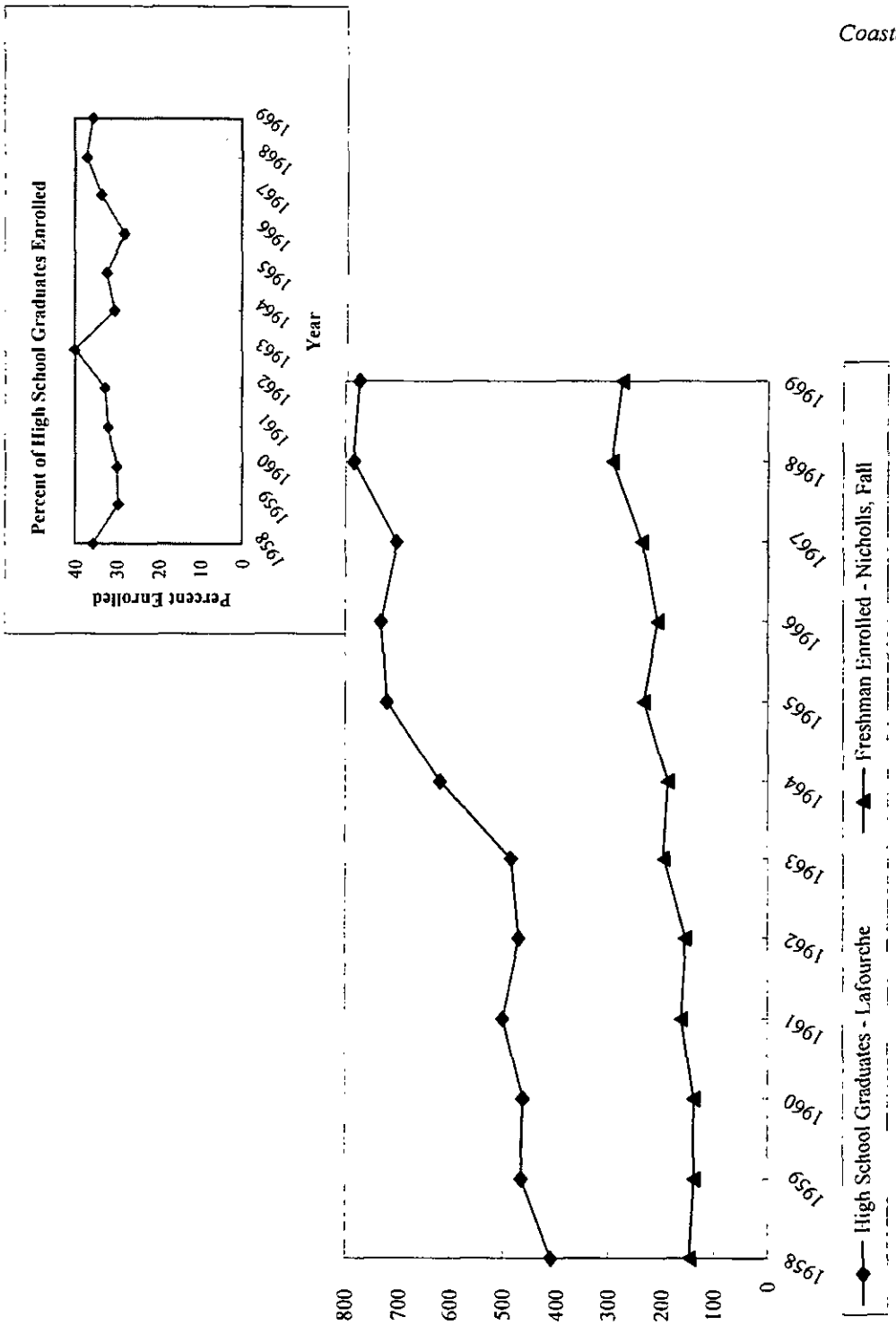


Figure 7-5. Enrollment at Nicholls College 1958 to 1969.

Source: Montz, 1970.

Wealth was displayed in lavish parties, personal airplanes, expensive gifts, and the purchase of shrimp trawlers, fancy cars, and cattle herds.

Local social networks served as both facilitators and gatekeepers in the new oil-based economy. For example, many boat owners and operators were members of the Freemasons, the world's largest fraternal order which reached its highest membership in the 1950's (http://cti.itc.virginia.edu/~jkh8x/soc257/nrms/Masons.html). Such connections began to play a role in the contracts that were negotiated and who got work.

The seasonal patterns of work that had prevailed during earlier periods were replaced by year round work operating on shifts of 7 days on and 7 days off, 14 and 14, and so on. With plenty of work available, south Lafourche residents worked on boats, in shipyards, and on the rigs. Trawling became a secondary activity for most, a way to invest profits earned in oil and maintain cultural practices. Trapping, too, occurred only during the off days.

Commuters from other parts of Louisiana and places more distant were able to work offshore and live in elsewhere. The majority of workers in specialized occupations, such as divers and helicopter pilots, were from outside the area. Helicopter pilots with experience in Vietnam were sought after because of their expertise. Boat crews were recruited from Mississippi, Alabama, and Florida.

Despite the excitement of the period, Cajuns were beginning to feel the loss of individual and local community autonomy. In their recollections, boat captains in particular shared frustration with working in a dangerous environment with limited ability to make decisions:

> The Coast Guard has put more responsibility on the captains, but has given them no more authority. Captains have no authority. Once three boats in my company were hired to tow a rig. I am in charge of the tug group. I get several weather reports that say a front is moving in with heavy winds from the southeast... (tells how he was forced to move the rig under very rough conditions)... In a couple more hours, the water was as smooth as glass. The whole situation could have been avoided if the captains had any authority. I could have called up the Coast Guard and lodged a protest, but the boat company would have helicoptered out a new captain and the move would have proceeded anyway, with me newly unemployed. [LA-MN-007, boat captain]

The canal digging and wetlands destruction that began in the 1940's continued, and the loss of land received greater attention. Due to saltwater intrusion and also over harvesting, cypress and old growth forests began disappearing. The environmental impacts affected both the economy and the social fabric of the community. Boat builders, for example, were forced to turn to younger trees for lumber, which some have argued are inadequate for the purpose. The loss of land meant that offspring no longer had family land on which to build, so they were required to move north as they reached "settling age." [LA-MN-001] As one longtime

resident pointed out, in contrast to traditional patterns where children settled next to their parents, you might find parents in Golden Meadow and their children in Cut Off.

Although the lack of housing and available land placed a natural limit on the number of new residents who could live within the community, the influx of outsiders continued. Still, the Houma people remained segregated in isolated settlements.

Then, in the height of the boom, some Cajun families left south Lafourche Parish. With the discovery and development of offshore oil fields in the North Sea escalating, several tugboat companies took boats and crews to live on the coasts of England and Scotland and teach the Europeans about the offshore industry. In a television newscast, Cajun company executives explained why they went overseas:

> You can only make so much money and spend so much money, but to be able to do things other people don't want to do or they won't do is something else. And I would say there's a certain amount of pride in what you're doing or what your people are accomplishing in an area like that. You know, especially when you're dealing with all the nations of Europe. They're all around the North Sea and they all see you operate and none of those people want to come and compete with you. (Nolty Theriot, in *Cajuns on the Queen's Sea*)

> They have very little formal education, our captains, our engineers, and what have you. They're very good mechanically, they're good mariners, and especially when there's a big challenge involved... It's a challenge that a Cajun will not take no for an answer to something he can't do. We can do anything anybody else can do, better... The fact that we come from nothing, from nobody. We've been run out of more countries than most people have ever lived in on purpose and the fact that we're back in demand to go back to the countries that ran us off in the first place. Sure, there's great pride to that and I'll take issue with anybody... For uneducated people, I find more intelligent people per capita in south Louisiana than I do any other place in the world. (Dick Guidry, in *Cajuns on the Queen's Sea*)

Working offshore and in shipyards replaced trawling and trapping as the occupations young people expected to enter when they left school, but attitudes toward education remained much the same. Skills such as welding and operating a boat were still learned most effectively through direct experience, and there was pride in passing a trade down from one generation to the next. Many young people left high school prior to or immediately after graduation and climbed aboard boats and rigs or into shipyards to work. Though without the racial overtones (see Section 7.3), the community illustrates the historic southern connection between prevalent economic activities, poor educational systems, and low educational attainment levels. A 35-year-old mariner talked of how the ramifications of actions during the late 1970's and early 1980's continue to be felt:

> Louisiana is number one in unemployment and last in education. One reason why is because of the industry we have down here. It used to be so easy.... Take myself. I dropped out of school at 16 years old and went to work on a supply boat. In 2 weeks I was told I would be the engineer. People on the boat helped me learn. By 19, I was the captain of a 100-ton vessel, only because that was all I could get for the age I was [the size of ship for which you can get a license depends on a mariner's age and sea time]. By 21, I was the captain of a 500-ton vessel, for anything above 100 tons up to 500. By 23, I was the captain of a 1,600 ton. To get the licenses, I had to take tests. Nothing that I learned in a school made me a captain. I got hands on training. That's what it goes back to, as far as people's ability, and education is in the background... Years ago people were running boats down here. They hunted, fished, trapped. The guys already knew how to run the boats. The oil companies said, "How about bringing me some supplies out to the rig?" and on like that. That went on for awhile. Then the Coast Guard decided they had to be licensed. [LA-DA-040, boat captain]

Both the tremendous need for labor and the long-standing tradition of leaving school whenever possible to go to work reinforced the existing school-to-work patterns of local youth. In the new economy, though, acquiring lots of money became the primary goal for many. Young workers developed expectations of steady, and hefty, incomes. With numerous jobs available, they moved from job to job seeking higher pay:

> The negative effect of the oil industry was that young men could go out and get jobs. Their interest in education was minimal. We had a tremendous drop-out rate. Kids would get out and go to work. They also worked in agriculture and shrimping and fishing. Not just oil. It was a community type attitude that caused this problem. We operate now with 45 to 55 percent of the people without a high school diploma. That is double what it should be for this area... [LA-DA-032, black educator]

The new rules for Coast Guard licensing of boat operators threatened to disrupt offshore supply activities by linking the licenses with written examinations rather than boat handling ability. The licensing was a product of the *International Convention on Standards for Training, Certification, and Watchkeeping* (STCW). STCW was adopted in 1978 by the International Maritime Organization, entered into force in 1984, and sets the qualification standards for masters, officers, and watch personnel on seagoing merchant vessels. Although the United States did not become a party to the convention until 1991, the Coast Guard began implementing changes in its licensing before that. Due to the inapplicability of some of the regulations to mariners working in the coastal waters and problems finding enough personnel who could meet the written requirements, the Coast Guard created a special licensing category for offshore vessels. Additional modifications, such as the implementation of an oral examination, helped southern Louisiana mariners get and maintain their licenses. Still, the

new policies were ignored by many during this period, and a mariner's skill continued to be valued over his formal credentials.

Though many employees relied on on-the-job training in most sectors related to OCS activity, vocational programs were expanded to meet the enormous demands for specialized labor. Technical schools and programs grew to meet the needs of industry, and private and public vocational-technical school enrollments increased. Public programs were generally quite structured and uniform, according to State guidelines. Nevertheless, the unique demands of the period saw the creation of specialized courses. For example, in 1971, a nautical science class was begun at South Lafourche High School. A club, made up of local oil service workers and trawlers who had boats, organized to help support the program. They contributed money toward the instructor's salary. Students took the classes during the school year and then got additional credit for working on boats in the summer. Welding classes were begun or expanded. The South Lafourche Technical School began offering programs for shift workers, setting up classes for students to attend every other week or whenever they were onshore.

At the same time, as the offshore industry advanced technologically, and as more professionals were needed, industry began to develop programs to encourage employees to attend colleges. Incentive programs, for example, were established through which companies paid full tuition for employees or underwrote at least part of the cost of obtaining undergraduate and graduate degrees (Davis, 1988). Also, as the period of prosperity advanced, some of the families that were bringing home good salaries from the oil patch began to encourage their children, often first generation high school graduates, to go to college. The overall strength of the economy made it possible for a few local residents who had earned professional degrees as doctors and lawyers to return to the community and establish practices.

> Universities prospered – oil-related business provided scholarships, matching funds, and grants to aid in underwriting basic and applied research. Programs that supported the petroleum infrastructure prospered. Their graduates prospered; the region prospered. The boom benefited everyone (Davis, 1988).

The impacts of oil were not, however, all encompassing. Although some professionals, especially teachers and others in relatively low paying jobs, were lured to positions created by the offshore activity, many remained in their jobs because the lure of money had not been the only factor in their occupational decisions. For those who had been raised to be educators, oil continued to be a means to that end:

> They almost attracted me to the oil field when I got out of college. One of my buddies was making $30,000 a year, and me, I was making $350 a month. My mother said, "It's not how much money you make, it's what you do." I could survive only on two or three jobs. I worked as a swimming instructor and

> waiting tables. I worked as a roustabout and a year as a flunkie on a rig working 14 and 7. Those were summer jobs. I knew I wasn't going to do this all my life. At first, I had a desire to be a professor, but I was not making enough money to leave my family and go get a Ph.D. I went to LSU for my master's. [LA-DA-050, white educator]

During this period, public school attendance by African-Americans and Houma Indians increased, but large numbers of young people continued to drop out of school prior to high school graduation. Because access to jobs and training for offshore-related work occurred primarily through informal networks, members of these groups remained at the margins of the booming economy. According to a lifelong resident:

> Short distance mobility was definitely a product of the oil industry when it came in... You didn't get black folks out there [on the oil rigs] till the 1960's. The folks that performed the menial jobs were the Native Americans. Now you tend to have a disproportionate number of Native Americans who are boat captains. Their kids are not finishing school. [LA-DA-031, black educator]

For many, the shift in occupations to industrial work sites to which access was limited and in education to classrooms and formal settings populated primarily by youth meant that adults and youth spent less time together. Under these circumstances, other forces also began to have a tremendous impact on south Lafourche youth from all groups. Several older residents, for example, attributed the problems of young people to the absence of meaningful work opportunities and the growing influence of television. These patterns, once established, have proven difficult to change.

7.2.4 Downturn (1983 to 1992)

Almost overnight, the bottom dropped out of the oil market and, consequently, the economy of south Lafourche Parish. The up and downturns of extractive industries are particularly devastating to undiversified rural economies. Recovery is difficult due to inherent advantages of urbanized areas with respect to educational and employment opportunities as well as cultural and social amenities. The urban-rural disparities that grew in the South after 1900 became particularly acute with the emergence of the Sun Belt economy during the 1970's. The South created 8.1 million jobs between 1980 and 1993, one million of which were located in rural districts. In Louisiana between 1970 and 1993, New Orleans and Baton Rouge, home to 43 percent of the State's population, accounted for 61 percent of the State's job growth (MDC, Inc., 1996).

Overall, the downturn in the offshore oil industry came as a shock and was devastating to many in the area. In 1986, Louisiana had the highest unemployment in the United States. Nevertheless, not all the layoffs and economic hardships came at once, depending on an individual's or company's place within the industry. For example, although drilling stopped,

production continued throughout the period and those involved in production were not laid off. Helicopter pilots generally fared well because the oil companies kept them employed as long as wells were producing and crews and maintenance personnel were being shuttled to and from the platforms. Some boat and fabrication companies survived, and some, those with no debt load that could take advantage of the ridiculously low prices for boats and equipment, even prospered.

> A lot of the people who went bankrupt went to work for someone else. A friend of mine had boats, and he went bankrupt. He went to work for [...]. While he was working for [...], he saved enough money to pay the bills to all the people he owed. He did not go back into the boat business but when he had enough money, he bought [another business]. Today he has that business, a big marina, a restaurant, a seafood processor, and an ice processing plant. Some people became port captains for others, or went to trawling or driving trucks. [LA-DA-038, retired educator]

Early in this period, some of the Cajuns who had gone to the North Sea returned. They bought big houses, fancy cars, and much more. Few, however, escaped the effects of the downturn.

Many families lost their livelihoods, their homes, and their savings. Locals turned to "anything we could find" to survive. In general, individuals and families who had become accustomed to living off good wages had to readjust to lower wages and a return to at least partial reliance on subsistence activities such as crawfishing and trawling. In addition, oyster fishing gained in importance. Though the economy lacked diversity, individuals survived through a wide range of activities. Much work was outside the formal economic sector, and women's contributions to household economies increased.

> My mama stayed home with us. It wasn't until [I was in] junior high when my dad was laid off as a welder that she went to work. [Another tribal member's] mom was a widow with an infant child. She had six kids and worked her whole life: cleaning house, in the shrimp shed. She made sure all her kids graduated high school. For the women who worked, you punched your own hours. There were not jobs that you went for an interview, nothing like that.... During the bust, my dad was a welder. When the boat industry crashed, they didn't need stuff like that. He had to go from being a welder making $15 an hour to being a security guard making minimum wage. My mom had to go out and work. You could go up and down the bayou and see houses for sale. My Dad, his health was not the best after doing all of that. He had three heart attacks within the past 4 to 5 years. Now he is at the point that the can't work anymore. [LA-DA-043, Houma educator]

Though the impacts of the decline in OCS activity were pervasive, they were not the only challenges facing the community. Shrimpers also faced new constraints. For example, turtle excluder devices (TEDs) were required on shrimping vessels beginning in 1991-92. The regulations drew widespread protest from shrimpers throughout the Gulf of Mexico. A rally held in Thibodaux drew 5,000 or 6,000 people. One fleet owner and processor from Pensacola wrote an open letter to his senator:

> These shrimpers do not wish to defy the law. They are honest, hard-working and law-abiding, but required use of the TED will destroy the only way they have of making a living. Many families have been shrimpers for generations. Most shrimpers are not fleet owners but rather single-boat owner/operators barely able to make a decent living. Many times, a trip will not even pay fuel and crew costs. Many of these people are uneducated and are not able to understand or fight government regulations (Durrenberger, 1992).

According to a shrimper in south Lafourche Parish, because TEDs reduced his catch, he fired his deckhand and fished by himself.

Despite the propensity to remain in the community, outmigration was another response to the difficult economic times. South Lafourche Parish had experienced less growth during the boom than many along the coast, so out migration was not as conspicuous as in other places. Still, many left, especially those who had come in with the oil boom. A lifelong resident summed it up:

> It got to a point in 1988 that you couldn't find a transient in Golden Meadow. Everyone here was born here, up and down the bayou. You did not see a person in a store who you didn't know. [LA-DA-038, retired educator]

Even among long timers, though, the fundamental shift to a cash economy, the increased population and demand for material goods, and the degraded environmental quality precluded a return to the pre-boom economy. Consequently, longtime residents left the area when they could no longer make a living. The population shifts are reflected in average school attendance (see Figure 7-6). The percentage of non-whites in the area remained very small, as shown in the student enrollments. According to residents and school officials who transferred student records, many southern Louisianans moved to Atlanta, Houston, and south Florida during this period. Such impacts of economic transition have had negative consequences for communities and workers throughout nineteenth- and twentieth-century southern history: the sundering of close kin and community ties through outmigration, and the lapse into poverty or marginal employment of those whose skills and education are no longer suited to the new economy. Communities suffer also in terms of lower tax revenues and stretched services, including education, rendering such towns less attractive to potential new economic activities.

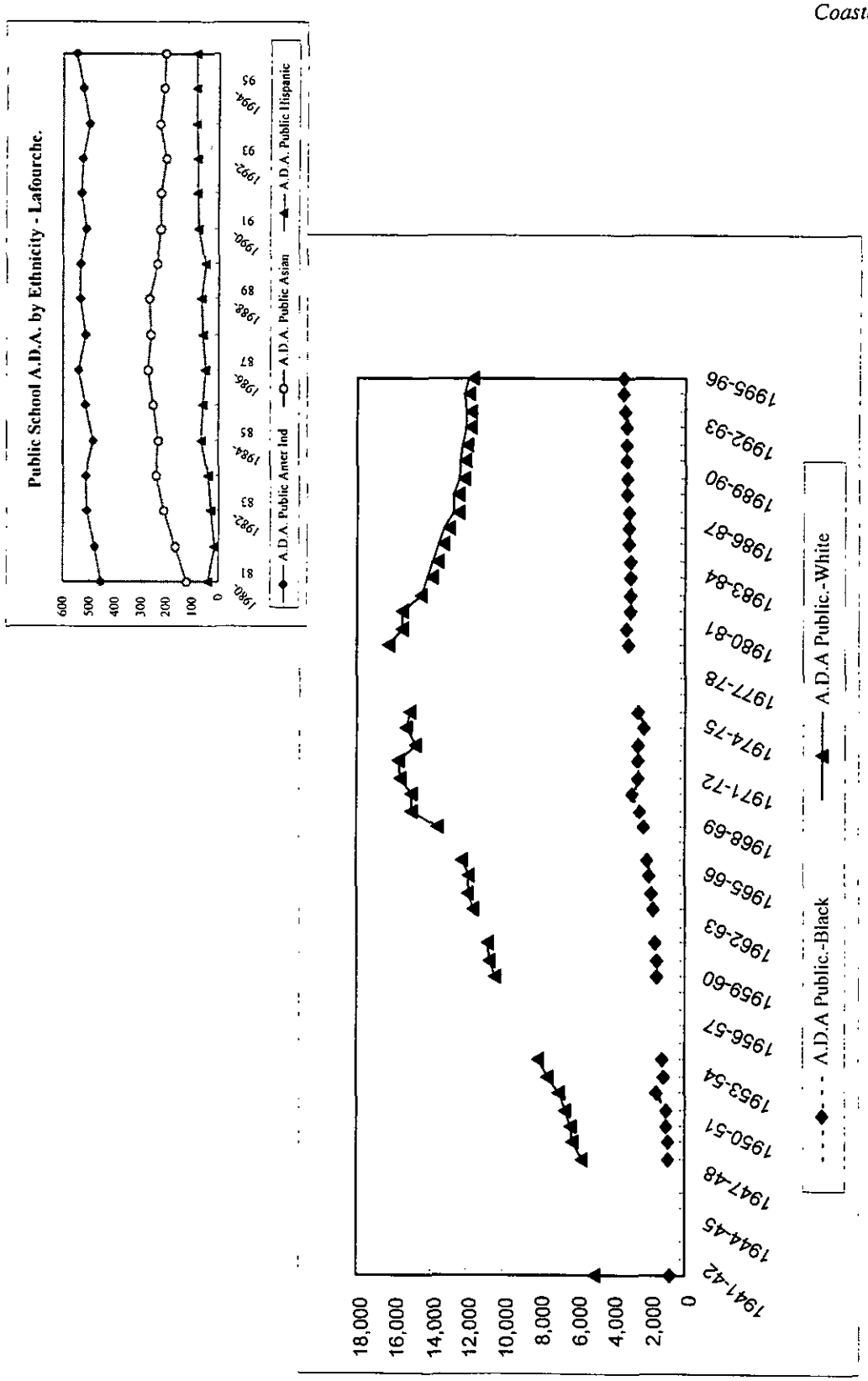


Figure 7-6. Average public school attendance in Lafourche Parish, 1941 to 1996.

Source: Louisiana Department of Education, 1941-1953, 1959-1967, 1968-1976, 1979-1996.

In south Lafourche Parish, the effects of the loss of residents, both newcomers and old timers, reverberated throughout the community. Impacts to the service economy were exacerbated because many oil field workers took their spouses who had served the community as teachers and nurses. According to a school administrator:

> In elementary education, it was hard. That's where we have the largest number of teachers. They also leave when their husbands leave. When the oil patch went down, we had a lot of that, teachers moving out. A lot of people left here to go to the Atlanta area because it was booming. I got calls from personnel directors and superintendents [who have received applications from former students]. [LA-DA-030, white university educator]

Schools and hospitals were somewhat successful in attracting individuals who had suffered from the decline in OCS activity but wanted to remain in the community. For those with a college education, for example, teaching and school administration again became attractive. Like other "government jobs," these positions were valuable in depressed economic times. Many individuals with teaching certificates who had left the profession for higher paying jobs in the oil industry tried to return to teaching and helped fill the void. An educator shared a common story:

> With the drop in offshore, people with degrees were coming into education... My cousin worked for Shell. He had a math degree. During the bust, he went back to teaching in New Orleans. [LA-DA-009, white educator]

The shortage of nurses was more difficult to remedy and had lasting repercussions in the region. A switch to nursing generally required additional education, so there was a lag time between a decision to change occupations and starting work. Also, although some men began going into nursing in response to the poor economics in the oil industry, nursing remained primarily a female profession. Temporary agencies from outside the area saw an opportunity to take advantage of a bad situation and exacerbated local problems.

> Five or six years ago, we did have problems [finding nurses]. We used to get a lot of our nurses [as spouses]. The wives of the husbands working in oil were experienced people. They came and hired on...[The nursing shortage] really got bad. We went to using agency nurses. It was more costly. They would charge higher rates for temps... We needed nurses and they weren't here. The agencies sprung up over night. It started out as a temporary thing, when you were in need of somebody to supplement your staff. Then, the nurses all went to the temp agencies. They tried to get hired back in the hospital at higher rates. We fixed that. We said if you worked for an agency you can never work for us again... From about 1989 to 1994 it lasted. People had moved out. It had an adverse effect on nursing. People who had moved with their husbands. It is

> still that women go with their husbands. "Wherever goes thou..." [LA-DA-056, hospital administrator]

The development of offshore oil fields overseas, the need for experienced labor there and elsewhere, and the lack of opportunities in the gulf led boat captains and crew to find work on the East Coast, in Alaska, Mexico, central America, and distant waters such as the Persian Gulf. Some local mariners were recruited to the East Coast to reduce union strength there. Coast Guard regulations began to be enforced, but many captains escaped notice if they were working in international waters. A young mother described how her husband was transferred to work in his boat company's Mexico office for 8 years, beginning in 1986. She would go down to visit him for up to 3 months at a time and then return home. When her son was born in 1992, she stayed with her husband in Mexico for 7 weeks. However, because her son was ill all the time, she went home to south Lafourche and did not return to Mexico. [LA-DA-057, white housewife]

Local businessmen observed the mass exodus of service companies from the area and sought help. Some turned to fraternal organizations for support, but access to social support networks was restricted by long standing ethnic group segregation. A small group of concerned industry leaders got together and formed the South Louisiana Economic Council to try to retain existing companies, recruit new ones, and develop an economic development strategy for the region including Assumption, Lafourche, St. Mary, and Terrebonne parishes. Following national trends and reacting to the negative impacts of the industrial economy, the leaders attempted to recruit service sector employers. However, many factors, such as low educational attainment, limited highway transportation, and lack of land, impeded their success. One individual chuckled as he recalled the futility of recruiting telemarketing firms to the communities in which the Cajun dialect prevailed.

Some changes occurred with no prodding from local leaders. For example, applying a corporate strategy for which it has become well known, Wal-Mart moved into the area as the local economy worsened. A Wal-Mart employee explained the rationale for the decision:

> The old empty Wal-Mart was opened 13 years ago, in 1985.... Wal-Mart thrives in areas where the economy is turning down. With everyday low prices, people know they can get stuff that they can afford. When you have the money, you go to Dilliards and the mall. When you don't, you go to Wal-Mart. [LA-DA-014, Wal-Mart employee]

Although some small local businesses were able to carve out specialized niches and survive the arrival of the national chain, many others were not. Among those that did not were several businesses owned and run by older individuals whose children did not want to take them over under the poor economic circumstances. Wal-Mart offered employment to local residents, and a job at Wal-Mart was considered by many to be a better option than leaving the community. Yet, the jobs could not replace lost oil-related work, even for those lucky

enough to get them. As is common in the shift from an industrial to a service economy, the jobs available were lower paying, and many were less than full time. Also, corporate policies clashed with local social expectations, and few were able to rise above the position of floor clerk. Again, those who opted to remain in the community were forced to forego opportunities for economic and career advancement.

> People around here want to stay in the area. The problem I have [in personnel] is that I cannot promote many of my good employees. It is Wal-Mart corporate policy that to advance to manager status you have to be willing to transfer and relocate. Around here, many people are not willing to do that. That's what keeps many of my associates at that level. [LA-DA-014, Wal-Mart employee]

The impacts of the downturn were negative for the majority, yet several businesses not only survived but began to diversify and grow during this period. Using political connections and social networks, local entrepreneurs found new niches. For example, one family-owned shipyard procured contracts to construct surface ships that support undersea vessels for the military and ice breakers for the National Science Foundation for use in Antarctic research. Another one expanded to build Coast Guard and Navy vessels.

In addition to the loss of jobs, Lafourche Parish was affected by a decrease in tax revenues, which had peaked in 1982 at $1.6 billion and were only $700 million by the 1987-88 fiscal year. To counter low and declining oil prices, the State of Louisiana raised sales, corporate franchise, and gasoline taxes. In 1986, some exemptions for food, drugs, and utilities were lifted. The result was to make Louisiana's tax structure more regressive (Davis, 1988)

Schools felt the combined effects of a loss in local revenue and a reduction in State allocations as their student populations dropped. For example, H.L. Bourgeois High School in Houma went from 1,387 students in 1980 to 900 in 1987. Lafourche Parish educators boasted that they had maintained teachers' salaries. In contrast, neighboring Terrebonne Parish cut teacher salaries and experienced a 41 day strike. Whether in salaries or not, the cuts were significant, difficult to make, and continued to impact the schools long after they were made.

> We had a $0.01 sales tax. That was devastated. A large percent was employee salaries. The other was support services. That went down. We weren't able to give any raises. We cut some of the supplemental pay we were giving the employees. We never cut basic salaries for teachers and employees.... In 1985 to '86, we cut $2.1 million off our budget or we would have gone bankrupt. [LA-DA-038, retired Lafourche educator]

> The 1989 teacher strike was the toughest time I had in education. I had one more than 50 percent of my teachers who stayed in. The cooks, janitors, and

> all kept the school open. I lost friends during the strike. I was in management and had to keep the school open... It was still tough a couple of years after that.... By '92, things were looking better. By '94 we were out of debt. [LA-DA-036, Terrebonne educator]

Creative administrators found ways to keep at least some extracurricular activities going, and schools turned to business and industry for support. In 1986, Lafourche Parish began the Academic Business and Community (ABC) program. The program was a cooperative venture between the business and the schools. Every school had a "godfather" business. Because everyone was in a tough economic situation, the school administrators specifically organized the program to elicit support other than money. Businesses were encouraged to invite students to their workplaces for field trips and provide student incentives. Educators described their strategies:

> Things got tight in the school. We managed to move money from one organization to another. We started bingo and were able to bring the school from the red to the black in three years.... Bingo, I think, saved us... We went heavy into debt in '85, '86, and '87. There were good people who carried our debt for us, like [...] at [a local sports store]. We started bingo about 1988-89, and we started creeping out of debt. The oil field hadn't turned yet. We couldn't depend on businesses giving us any money. [LA-DA-036, retired Lafourche educator]

University budgets were constantly being redefined as State budgets were written and rewritten to cover general fund deficits (Davis, 1988).

Despite all this, education came to be viewed by many as the best option for the future. Linking to national trends, parents and schools increased the emphasis away from vocational skills toward academics and began encouraging most youth to go to college.

> For so long in Lafourche and Terrebonne you didn't need an education. The group that's got kids in school now were of that generation. The attitude was widespread among those who really didn't want to be in school in the first place. Then we moved to where every kid was born with the idea they were going to college. After Kennedy, the space race, and all that, the idea that everybody needs a college education, it caught on. [LA-DA-036, white educator]

High school graduates who could not find jobs turned to the universities and sought financial assistance. Divorced women entered the university to gain the education needed to get jobs that would support their children. All these factors led to a rapid rise in university enrollments at a time of decreasing funds in university coffers. During this period, parishes that had run buses to Nicholls State University stopped offering the service. However, lack of

revenue was not the only factor in those decisions. Because many students worked in addition to going to school and drove personal vehicles, use of the bus service had declined.

The lack of academic entrance requirements at Nicholls made it easy for students to begin college. Inadequate preparation and skills made it nearly impossible for most to finish. Some parents became frustrated spending money paying tuition for their children to take remedial courses because they were not ready for college. Even those who finished faced difficult choices. With few local jobs for those with a college education, for many a consequence of completing higher education was leaving the community.

The individual and social costs of widespread educational failure are reflected in local stories and fueled support for workforce preparation programs by the end of the 1980's. These programs ushered in a new era in all post-secondary education driven by industry needs, rather than educators, and characterized by efforts to attract academically talented students. Begun in the late 1980's, these programs gained momentum in south Lafourche Parish after 1993 when the offshore oil and gas industry picked up, and they are described in detail in the next section.

However, in the 1980's, technical education efforts received a setback. In the midst of the increase in overall college enrollments, participation in petroleum-related programs plummeted. Schools and colleges reduced their commitment to programs directly related to offshore oil related activities and tried to find alternatives. Students in engineering tech declined as activity in the gulf went down (see Figure 7-7), so programs were closed.

Similarly, the nautical science and welding programs at South Lafourche High School were discontinued before the end of the decade.

Technical colleges and trade schools, whose success is measured by their ability to place students in jobs, suffered when jobs became scarce. Program offerings and budgets for the technical schools are set by the State Department of Education and the legislature, and after a few years of declining OCS activity, several programs were eliminated. For example, control of the south campus of the Louisiana Technical School system in Lafourche, which opened October 9, 1978, was passed to the school in Houma in September 1986. The last class at the school was held June 17, 1988. At a time when local residents were turning to the schools for retraining, the schools had inadequate funds and program alternatives to make a big difference.

In 1990, the economy improved slightly as local shipyards began contracting with the Federal government to produce Coast Guard and Navy vessels. In response to industry pressure, the governor of Louisiana turned to the State's emergency fund and created welding programs. The technical school in south Lafourche Parish was reopened as a branch of the Houma campus in January 1991 and then, in 1994, it was united with Lafourche's Thibodaux

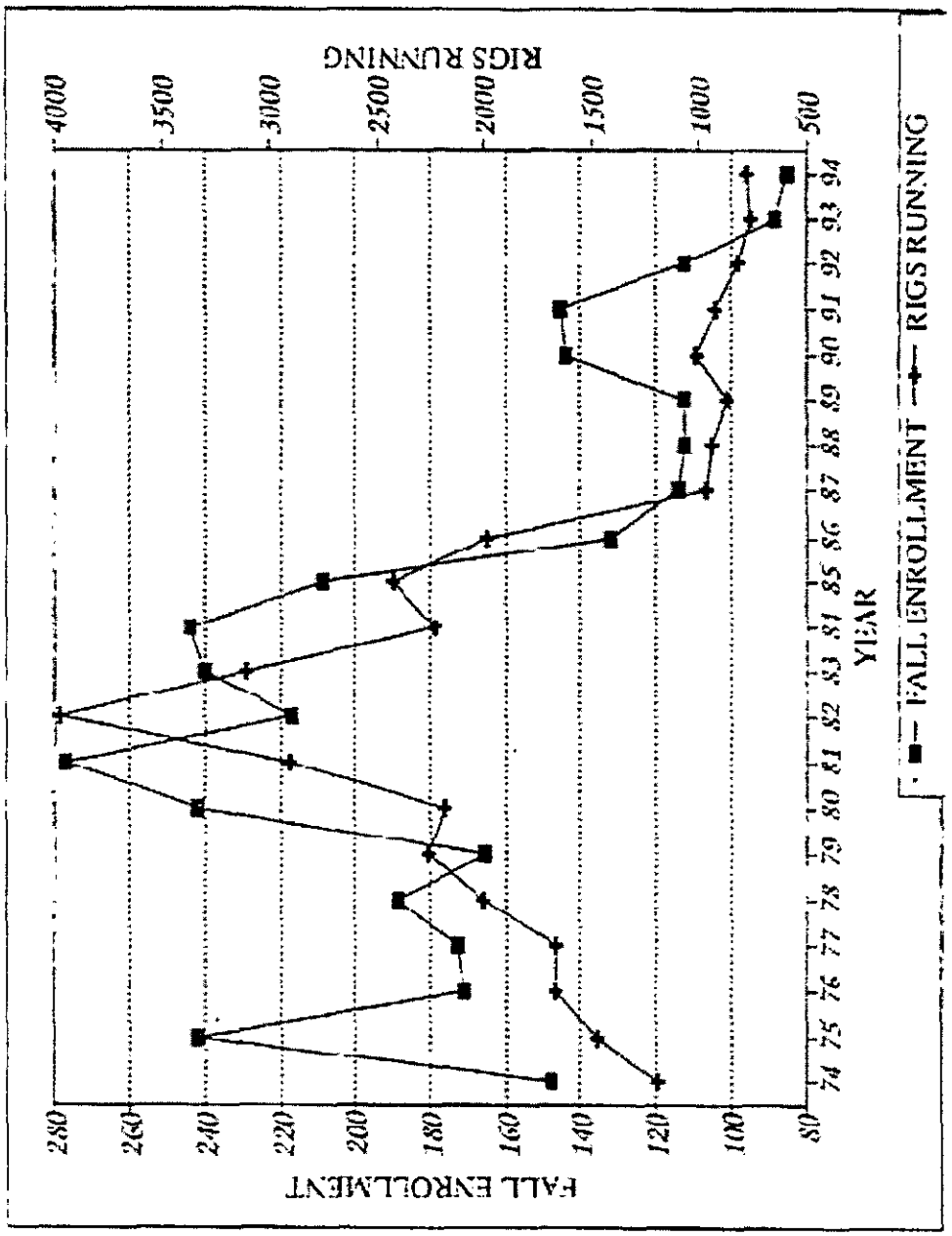


Figure 7-7. Enrollment in engineering technology at Nicholls College and number of rigs operating in the Gulf.

Source: Landry, 1998.

Technical Institute to form the Lafourche branches of the Louisiana Technical College system.

The changes coincided with an upturn in offshore oil and gas activity in the gulf. Prior to the downturn, some observers had been arguing, in vain, for economic diversification. The decline in oil-related revenues and business opportunities reinforced their arguments. The ability to diversify the economy was linked to the need for a better educational system, and alliances between business/industry and education began to be viewed as the major solution. However, diversification and educational improvement are difficult to achieve in an economy so dominated by one industry, and the return of OCS activity threatened to undermine the hesitant progress that had been made.

> The bottom line is we can never totally diversify away from oil and gas. It's too entrenched. Like the seafood industry. It's who we are. It's in the ground. We can never get away from it.... We got companies to diversify. The biggest problem is that now things are good. We have to get companies to not get complacent and to look ahead 5 to 10 years. [LA-DA-068, Cajun businessman]

7.2.5 Return of Offshore Oil (1993 to 1998)

Moving into the last decade of the twentieth century, south Lafourche Parish began to experience the impacts of a revitalized offshore oil and gas industry. As in earlier periods, the impacts stemmed from the confluence of industry actions and State and Federal policies, some not directly related to OCS activity. By the time of the 1990's upturn in activity, the oil and gas industry and associated service industries, like many other United States industries, had undergone significant restructuring. Federal policies to encourage drilling in deep water contributed to the changes. The deep water activity was of particular importance to south Lafourche because Port Fourchon had geared up specifically to service it (see Section 6). The move into deep water required huge capital investments beyond the means of most individual companies. That and other factors, such as the desire to avoid the wage and price wars of the 1970's, stimulated mergers and new transactions among companies. Both oil and service companies tackled the challenge by forming alliances, special partnerships in which the companies agree to certain obligations and responsibilities, including exclusive use of contractors and products. By 1997, several family-owned companies had gone public and begun selling shares on the stock market.

> With the upturn have come the creation of alliances of businesses. Oil companies are entering into alliances with boat companies, trucking companies, and electronics firms. Boat companies, in turn, are entering into alliances with training companies. Alliances are formed through networking and are essentially single source contracting arrangements. The involved companies

> agree on a margin of profit and the spot market is eliminated. [LA-MN-015, Cajun businessman]

Several government policies not specifically related to offshore oil and gas nevertheless have had significant impacts on the OCS activity. For example, throughout the industry, larger companies hired human resource managers to develop new company policies and handle the increasing paperwork related to new Federal employment laws and regulations. Factors such as new requirements for safety and drug testing have distinguished the recent upturn from the activity of the early 1970's and 1980's and have affected both labor and management. Again, the changes have come both from within and outside the offshore oil and gas industry. The impetus for the more stringent requirements has come from insurance companies concerned with lowering liability costs and from the U.S. government, especially OSHA and the Coast Guard. As the companies involved in these ventures have established new workplace standards and practices, these have begun to be adapted throughout the industry. For example, Shell designed and implemented a new safety program for its Mars platform. The company then required the program be adopted by its contractors, and soon it was operating all across the gulf.

Oil and service companies have trimmed their workforces, set up training programs, and focused on retention policies for the employees they wish to keep. Human resource personnel argued that they had difficulty finding employees who could pass drug screens and properly complete applications. These problems are not unique to southern Louisiana, but the attention to workplace safety necessitated by the large proportion of potentially hazardous workplaces makes them especially noticeable there. Many companies turned to contract employees to meet labor needs, lower costs, and reduce their responsibilities and risks. Under typical contract arrangements, the contracting company has not provided for unemployment, workers compensation, or health benefits. Individuals could be brought onto a job and then quickly let go when no longer needed. Yet, problems with contract workers, especially the lack of commitment to any particular company and consequent declines in work quality, have led some company personnel officers to argue that they will hire and retain workers as company employees.

> We are trying to build employees again, not just workers. The companies have learned their lesson. Before they said just give me the dregs, whatever is cheaper. Those companies here are having to compete, not locally, globally. Their products have to measure up. The kind of work quality we had before was not cutting it. The effort we've taken is to keep what's happening now with the labor shortage from happening again.... What has been happening and has needed to happen for a long time is we're breaking out of the old roles. It's not like in the early '80's where we were forced. This time it's by choice. People are being a little more self-motivated. People are not blaming their parents, their spouse, or the economy. I'm wondering if the forced change in the

> early '80's helped with this attitude. We've been through it before. I'm wondering if what's happened to us in the early '80's was the best thing. We were isolated and self-governed... [LA-DA-068, Cajun businessman]

As a consequence of industry actions and government policies, employees have faced more stringent conditions than they did in the earlier period, ranging from regular drug testing to the need for greater technical skills. Even experienced workers' jobs demand new skills, and many have discovered they have less leverage in negotiating their employment. Many workers have expressed concern that they have been given more responsibilities but neither more authority nor compensation than they had in the past.

> I was a captain during the downturn. Now that things are going back up, the money is not climbing equally for captains as for deck hands. It is not climbing for what it should be for the size of the license... [LA-DA-040, boat captain]

Despite the companies' efforts to meet labor needs, they faced tremendous worker shortages; workers who left during the downturn of the 1980's did not return. The impact was felt in the shipyards, on the boats and platforms, and in local institutions, such as hospitals and plumbing businesses. Several large companies began importing workers and developing their own training programs. For example, due to the labor shortages, some companies began extensive recruiting programs outside Louisiana, some brought in Mexican labor, and some contracted with intermediaries who would get workers from the streets of New Orleans, round them up and transport them to south Lafourche. Among some specialized personnel, such as divers and helicopter pilots, few if any workers hired have been from Louisiana. Even for others, such as mariners, companies have increasingly brought in people from outside. Some argued that, by 1998, as many as half the captains working in the gulf were non-local, but no information is available on how many captains are working at any one time. Because of south Lafourche Parish's significant maritime history, a detailed look at recent industry and policy changes related to work and education in that industry is provided (see Box 7.4 at the end of Section 7.2). Shipyard representatives described their workforce needs:

> One of our shipyards recently processed 875 new hires to keep 106. In Lockport, we hired 300 plus and lost 10. We could double this workforce and have all the work we need for the next 3 years. Just this month reality set in that we're not going to be able to hire people to meet our needs. We did everything we can think of to get workers.... We will put them up during 7 and 7 or 14 and 14. They have not come. There's nobody left to come. This is not a unique problem to Louisiana. All are complaining that there is not enough workforce. It is real different this time. We don't see how we're going to solve it. I have asked to be able to bring foreign labor in for temporary. There are 6,000 ship building jobs in southern Louisiana right now. [LA-DA-034, shipyard owner]

As the OCS activity picked up, work schedules of 14 on and 7 off, 21 and 7 and even longer periods offshore became common due to the need to keep rigs and boats operating and to the longer distances to deep water activity. Many workers returned to earlier patterns and began to jump from job to job for higher wages. As in the past, many have come to rely on overtime pay to meet their spending patterns. Yet, significant industry restructuring has prevented most individuals from reaping large benefits.

Another difference in the upturn of the mid-1990's has been its international nature. Since the 1980's, offshore oil and gas industries have emerged in many countries around the world. Rig components, such as platform jackets, can be manufactured in other countries. Competition has been stiff and decisions driven by the demands of global markets, both for production for the gulf and for elsewhere. The workforce has become international as well. Cajuns effectively trained mariners in places like the North Sea, and their knowledge and skills are no longer unique. Unequal labor rates among nations have meant that even in periods of worker shortages, locals have expressed fear that they will be displaced by international workers.

Also, with deep water, speed has become an important factor because the activity occurs further offshore (80-120 mi). Consequently, boat companies have been building faster boats, and the majors have used helicopters almost exclusively for crew changes. Demand for helicopter pilots has increased, resulting in shortages of experienced pilots, such as the Vietnam era pilots who have had many times the flying hours of non-Vietnam pilots. The boat companies have continued to provide support for offshore, and trucking to and from the ports has become big business. Construction equipment, for example, that used to be hauled by tugs is now moved about by trucks. Drilling equipment has always been hauled by trucks. Although transportation is cheaper by barge, it is quicker by truck.

The relationship between shrimping and OCS activity has remained complex. Since the 1970's, shrimpers across the Gulf Coast have been squeezed by rising fuel costs, increased imports of farm-grown shrimp from Asia and Latin America, high interest rates on boat loans, and, recently, the imposition of TEDs, turtle excluder devices, in their trawls. Many shrimpers have been forced out of business. Some have turned to the rigs while others have shifted to service boats to survive. Comparisons to the past dominated most discussions of shrimping:

> When I was in school (in the early '80's), I had a cousin who was a shrimper. He had a new car every year for 5 years. He totaled every one of them. You didn't have to know what you were doing to make money. Now, you can make a living but can't be the Weekend Warrior anymore. It was not hard to make money down here in the 1970's. Nowadays, to be a trawler, you can't come in every weekend, every function, every holiday. You have to stay out. Ignore people who say the season is no good. True trawlers come in and sell. They stay no more than 2 days and they're gone. The Weekend Warrior

> evolved when the oil field went bust. People wanted to stay in the area. Their fathers did it. Now, the oil field is biting again. That's where they're making a living. They just trawl on the weekends now. The true trawler, you don't see them. They fish all across the gulf from the Texas to the Florida seasons. [LA-DA-016, Cajun businessman]

Even if shrimping were what it had been in the 1970's, due to the population increase, the seafood industry could not support south Lafourche's population. In addition, the fishermen have become more efficient, so fewer shrimpers can bring in more shrimp.

The Freemason society has remained strong, and some individuals who had never become members have begun to seek membership. Lawyers, doctors, and others with extra cash have invested in boat building again. Though still hesitant about newcomers, some locals' attitudes have changed. That change and the additional land available for development due to the levees have meant that apartment complexes and housing developments have been started in the northern region where land is available (see Section 6).

Agriculture has been reduced significantly. Only two large cattle businesses remain in the area. Many individuals continue to keep a few head of cattle, enough for their own personal meat supply. Cattle are a hobby and a tax write-off for those with another source of income, such as boat owners. With the levees, cattle have become a "way of keeping property." Water is pumped from the land within the levee and cattle are moved in to help settle it. Ten to fifteen head of cattle have been found to control overgrowth.

The pressures put on the system by an ever increasing population also have been observed by some. As in many places where problems are extensive and complex, some have pointed fingers at simple and identifiable causes.

> The biggest change is the environment. It's shot. We're losing miles of wetlands every year. [LA-MN-010, retired educator]

> The fisheries. Now there are ten times the fishermen the industry can sustain. I told the government, and then they came and dumped 40,000 Vietnamese on us.... [LA-DA-011, retired oil worker]

Historically, racial tension has accompanied tight economies. The genesis of Jim Crow and disfranchisement owed partially to the economic recession of the early 1890's. More recently, ethnic tensions have emerged between Anglos and Hispanics in parts of Texas and Florida, and between Southeast Asians in Texas, Louisiana, and Florida. As those with limited education and skills compete with newcomers, these tensions are likely to persist. Reminiscent of the 1970's, to supplement industry training programs, educational institutions were urged to develop specialized programs to meet the demands for managers and for skilled craftspeople, especially mariners and welders who could work in fabrication and

shipyards. In general, most jobs require at least high school, if not post-secondary, education. Industry has begun requiring technical skills, so both new and experienced workers have returned to school. State policies have mirrored Federal ones to encourage all students to go to college, and college preparatory curricula have been emphasized in K-12 schools. School graduation rates have risen (see Figure 7-8). The Louisiana Tuition Opportunity Program for Students (TOPS) is a comprehensive program of State scholarships that guarantees funding for college for students who meet minimum standards, and it has some technical college educators and business leaders concerned.

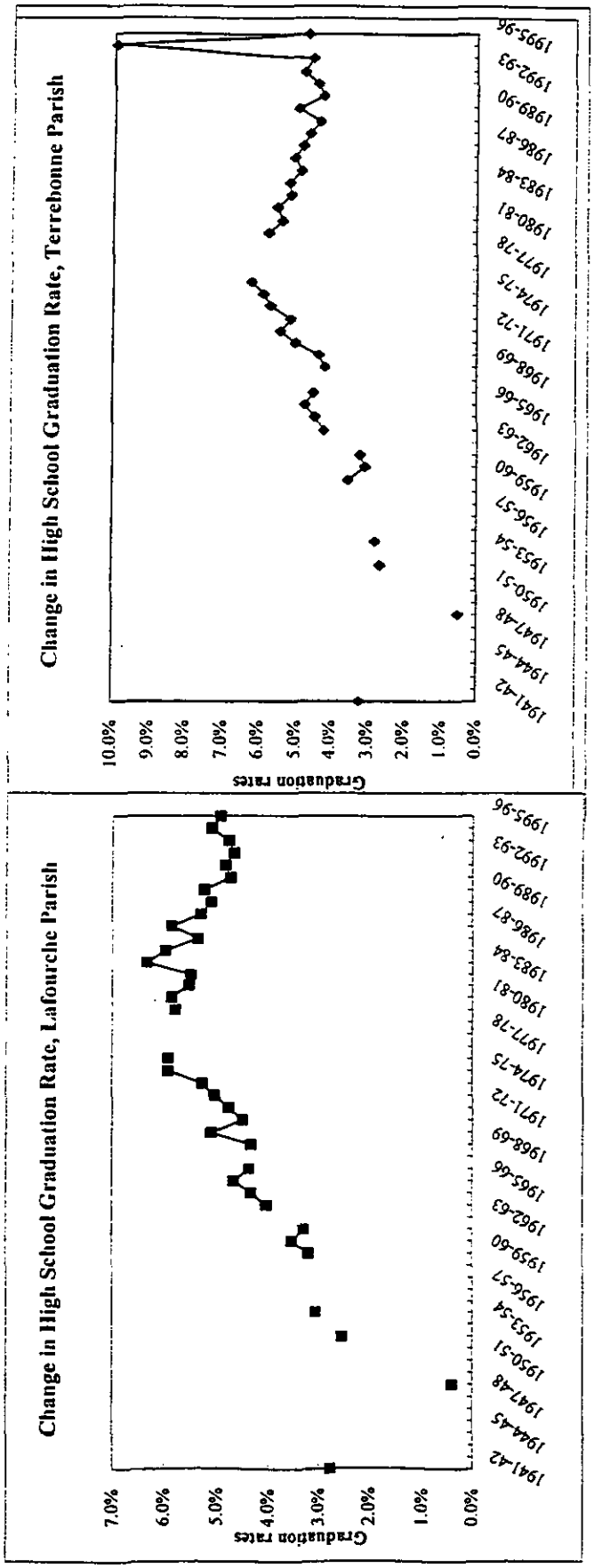
> This year's State legislature passed the TOPS program. If you score a 19 on your ACT and have a 2.56 grade point average and take a college prep curriculum, which includes two foreign languages and math courses, your college tuition will be paid for by the State. It effectively kills the idea of vocational education. What parent is going to allow their student [to go to a vocational school when they could go to college for free]? The kids are also eligible for vo tech, but you've lost two years of this kid's training. Economists are saying that only 20 percent of jobs require a baccalaureate training; the others are technical. But, the major emphasis on all educational levels is college preparatory. [LA-DA-033, white educator]

The needs of the oil industry, which are by and large perceived to be congruent with the needs of the community, still factor heavily in individual and community decisions.

> Oil has been both a blessing and a curse to Louisiana. It has been a blessing because it brought us high paying jobs, but years ago they were available without a need for education, in the '40's and '50's. Now, the oil industry has made it very clear they want a well educated workforce. They can afford it. It is helping our young people because they are getting the education. In a manner of one generation it went from these kinds of people [without an education] to now you have to have a college degree. [LA-DA-030, white educator]

The emphasis on college has led to major efforts to attract successful students to vocational education. Though local industries have sought college educated workers, they also have needed skilled craftspeople. The changes in the community that have interrupted traditional patterns in which parents proudly passed their occupational skills to their children have contributed to worker shortages in welding and maritime industries. Physical labor has come to be seen as the province of the poor and ignorant. Young people have begun to shun such activity and have proven reluctant to pursue oil and gas related careers. With few local economic alternatives, workforce initiatives have been embraced by many in industry and education to ensure that schools produce workers suited to the local economy.

> The whole idea is to keep our kids -- our resources -- in the community in which they were born. If the kids don't stay here, the community will die.



Graduation rate - Number of graduates/average daily attendance of all students

Figure 7-8. Lafourche and Terrrebonne graduation rates, 1941 to 1996.

Source: Louisiana Department of Education.

> There are a certain amount of students in every school that are not college material. Those not going to college -- we are trying to train them and provide an income that they can support their family, support themselves. Today, a graduate of the program can make $90 per day with a high school education. Their room and board is paid for, their transportation to and from the job is provided. We assist them in getting further training. Within 1 year, they are eligible to upgrade with other licenses. Within 3-5 years, a young person can be making $50,000 per year with no college degree. We're not trying to take college out of the picture, but we're trying to give another option for kids not going to college. Up until now, if your family wasn't in the boat business, then it was hard for you to get in. This gives the community an opportunity. [LA-DA-017, shipyard manager]

The current governor of Louisiana is an industrialist from St. Mary Parish in south Louisiana and has supported workforce preparation programs and better articulation between the high schools and technical colleges. The Bayou Region, which includes south Lafourche Parish, has brought industry leaders and educators together in what State administrators have considered the most successful school-to-work program in Louisiana (see Box 7.5 at the end of Section 7.2). The education of young mariners in south Lafourche Parish has moved from the decks of independent family owned fishing vessels to an industry financed computer laboratory and galley in the public high school (see Figure 7-9). A participant described the motivation behind the program:

> In dealing with overseas competitors, we realized how far behind we are in training our youth. In the 1980's, we hit bottom. We lost a bunch of people -- our craftspeople left this area and went to do something else. When things picked back up, people did not come back. We continued to operate during the downturn - okay. Now things are booming. We are building, etc. We need people and can't find them. We pulled from the Bayou La Batre area, the Galveston area, the Pensacola area. We have exhausted these. Nobody is left to pull. We looked at our counterparts overseas. They start training in schools in the early ages. We decided we need to do something to get our kids involved in something that has supported this area for a long time -- working in the sea. I talked to [a former south Lafourche educator], and years ago they had a nautical science program. They had an approved curriculum. We modified that. The school had all the tools, but they didn't have the money. We had the money. We combined forces and came up with the Marine Education Program. They dedicated a building. We got our shipyard crews in to clean up the building, get it built. We worked together with [...] other local companies. [LA-DA-017, shipyard manager]

The success of the school-to-work and other workforce education programs remains to be seen. Many factors influence a young person's selection of a career. Many parents still talk

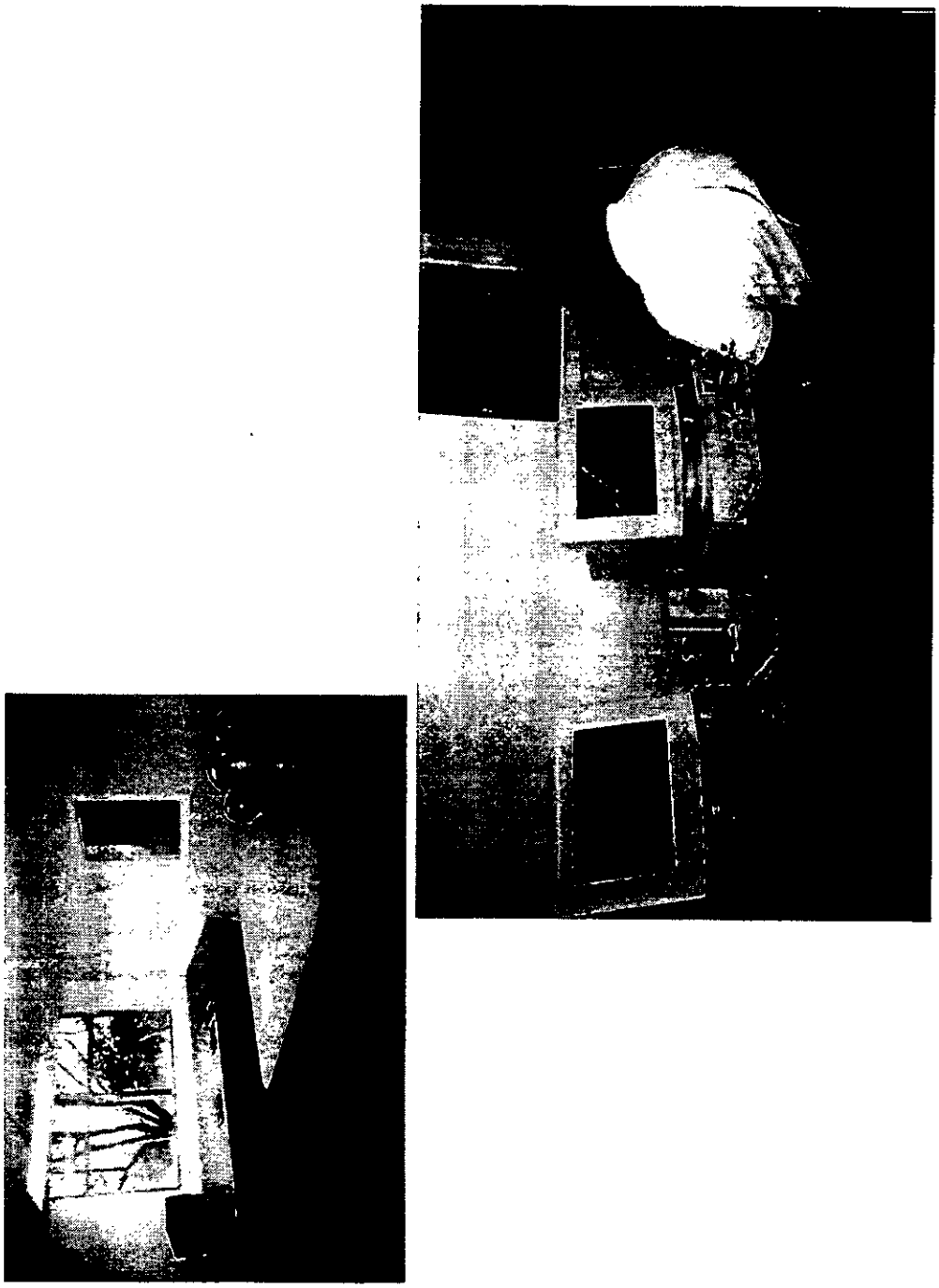


Figure 7-9. Marine Operations program facility at South Lafourche High School.

about how they would try to dissuade their children from becoming mariners, welders, or other craftspeople who serve the offshore oil and gas industry. One mariner's response was straightforward.

> If I can help it, I do not desire to see my son go into the oil field. [why?] Because I did it. [LA-DA-040, boat captain]

The stratification in the job market resulting from the transition of the southern economy to more service-oriented activities also has produced a stratification of attitudes toward different types of work. Jobs involving physical labor and requiring at most a modest amount of formal education have become devalued in the minds of upwardly mobile middle-class families seeking promising futures for their sons and daughters. The changing attitudes toward education noted above is one indicator of a more general attitudinal change. The struggles with technical and career educational programs reflect these mindsets as well.

Technical training schools proved more expensive to operate than strictly academic institutions. Also, Louisiana educators, like others, battled public perceptions that vocationally-oriented education is more properly the province of the home or of on-the-job training than of so-called "book learning." Another public perception was that such training was the last resort for incorrigibles, intellectually inferior students, or blacks. Most serious was the perception (and to some degree, the reality) that students who received training for a specific job would be unable to find employment of that type, especially in the decades after 1970 when job opportunities changed rapidly as a result of changing technologies. [Kline, 1974; *Education in Louisiana*, 57; 72-74.] The skepticism which some residents of the study communities have expressed toward future OCS activity is wound up to some degree with the issue of technical education. Whatever their importance locally, extractive industries, such as oil and gas exploration, are not representative of the direction of the broader southern economy today or in the near future, and the tension between the needs of OCS-related work and of other economic pursuits may heighten the differences among communities like south Lafourche Parish and others.

The lack of potential employees who have the skills needed by employers has led industry to work with educators to encourage more young people to choose post-secondary options other than college. The informal apprentice system of former years has been replaced by formal programs offered through the high school. Local fabricators joined forces to get an apprenticeship program sponsored by the South Louisiana Economic Council. The first apprenticeship, which required approval by the Department of Labor, involved four 16-year olds training to become welder fitters. Several other apprenticeships are being developed. Both employers and employees are placing greater emphasis on cross training. Educators, especially those who witnessed the difficulties of workers who had narrow skills and could do nothing else, are emphasizing the transferability of skills and certification. The technical colleges are again having trouble finding and keeping skilled teachers, especially in areas

such as welding where the pressures are greatest to put out workers. The conflicting messages and incentives for students and parents are obvious to people at the local level.

Enrollment at Nicholls State University increased in the early 1990's, declined in 1993, and has fluctuated since (see Figure 7-10). As shown in the figure, enrollment in the School of Education at Nicholls has been growing steadily.

To address the gap between present needs and past educational achievements, elementary schools have organized parent literacy classes. Within a few years the number of schools participating in the program rose from six to seventeen. Unfortunately, recent cuts in funding have reduced the number of paraprofessionals from seven to three and have left the programs operating primarily on the voluntary efforts of several parents who had been through the classes. Special education has changed in line with recent Federal trends toward the inclusion of all students in regular classrooms. These changes have affected all schools and were identified by administrators and teachers during the study as among the most significant impacts to education in recent years.

With more jobs becoming available, some participants believed that students with post-secondary degrees would be able to return to the area and find work. Among all groups, young people appear more willing to leave the community, at least for a period of time, than in the past. Due to socially imposed ceilings, African-American and Houma students who have succeeded in school generally have been forced to leave the community to find work appropriate to their skills.

> My brother... had a 4.0 and went to Nicholls. He had to move out of the area. He would never have gotten anything around here that would give him the opportunity he got... It would have been hard for my brother to get into around here. He wouldn't have put up with the old boys. He would not be in the position he is in so quickly if he had stayed around here. My mom finally cried when they bought a house. That means he's not coming back. [LA-DA-043, Houma educator]

Problems such as discipline and lack of respect for authority affect Louisiana as they do all areas of the United States, so the stable, more rigid standards of southern Lafourche Parish are making the community attractive to educators. For example, trends in desirability of locations for teaching have reversed. Positions in south Lafourche Parish are hard to get. Nevertheless, south Lafourche Parish has not escaped the social problems confronting the rest of the Louisiana and U.S. populations. Among those mentioned frequently are single parent families, students and parents whose work interferes with homework and participation in school functions, and the introduction of values and ideas from outside the community.

> By the time I left the high school [in 1994], probably 50 percent of our students came from single parent homes. That was getting to be one of our big

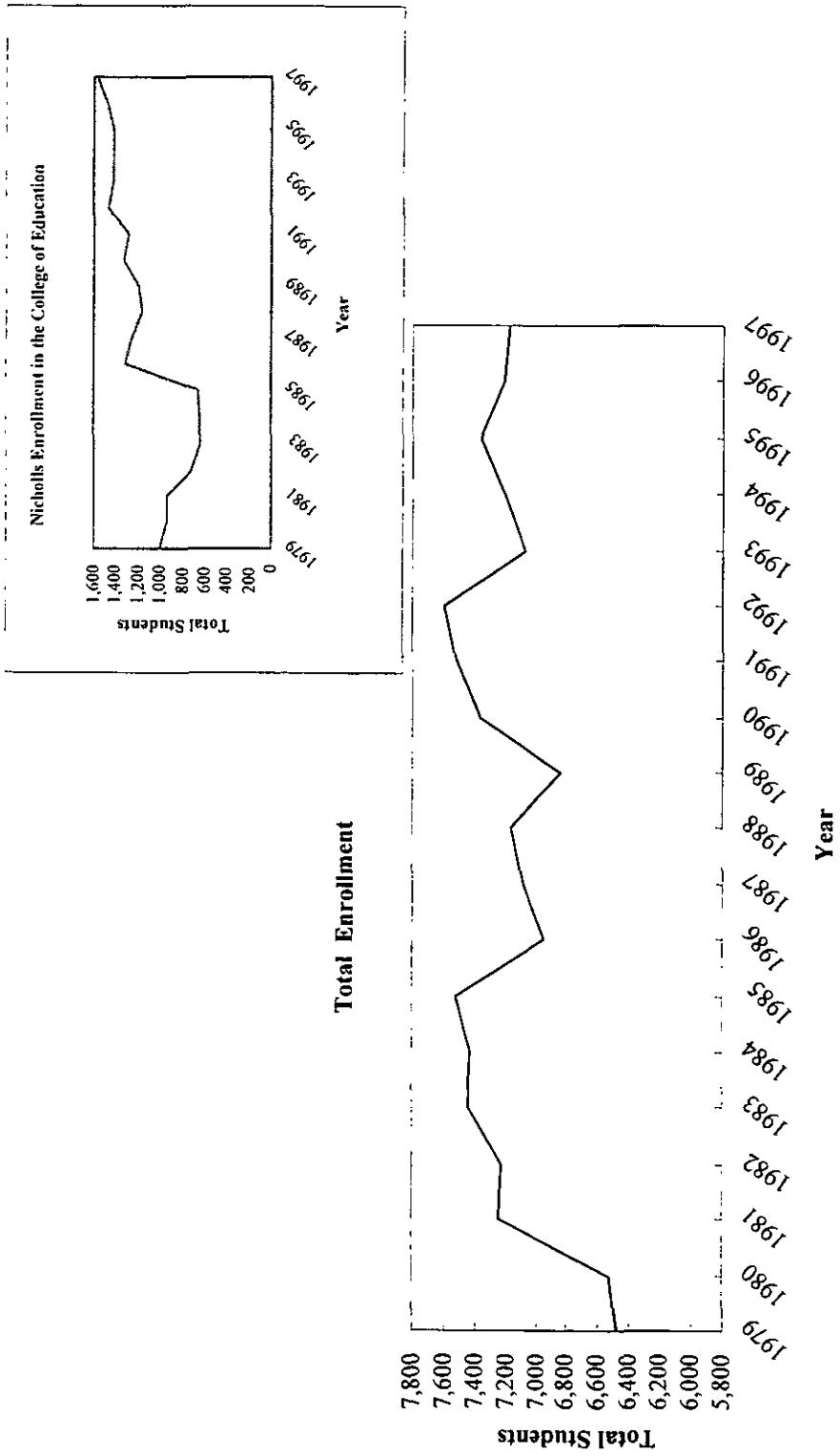


Figure 7-10. Enrollment at Nicholls State University, 1979 to 1997.

Source: Nicholls State University Registrar, 1998.

> problems, for us to relate to students who only had one parent. [LA-DA-036, white educator]

> We have many, many more students today who are working part time and full time. I was talking [with a counselor] and we decided about 60 percent of that is necessity and 40 percent is perceived necessity. Students today are much more consumer oriented. For them, it is a necessity to have a TV, a car, a VCR in their room, etc. It makes a tremendous difference in the focus. They have to split their focus and it is much more difficult to do well. [LA-DA-064, university administrator]

The links between the present problems and the offshore oil and gas industry are ambiguous. Locals believe that both divorce rates and the need for women to get regular jobs outside the home rose during the bust. However, the strength of the Catholic Church and prohibitions against divorce also rose during that time. Likewise, though the abundance of high paying jobs encouraged materialist lifestyles when the oil industry was booming and today's college students were young, such lifestyles are common throughout the United States, and the strong economy .

With intermarriage and greater economic mobility for some, the Native Americans have become more dispersed in the population. Although many still live "down the bayou," south of the Intracoastal Canal, others live in the suburbs of Houma and throughout Lafourche and Terrebonne parishes. Efforts to recognize and revitalize elements of Houma culture are increasing. However, African-Americans and Houma Indian students have continued to experience higher dropout rates than other students.

Likewise, many local residents have lamented the loss of the unique Cajun culture, but efforts to introduce bilingual French-English programs have not been as comprehensive or widespread as in other parts of Louisiana. Because of the painful memories associated with speaking French at school during their childhoods, many adults have linked bilingualism to low educational attainment. Other signs of cultural change, such as the gradual loss of the mariner tradition as young people are encouraged to pursue alternate occupations, have caused deep concern, especially among older residents.

> Our kids are not speaking French. But, if I have to choose, I want an educated person who can learn rather than an uneducated person who can speak French. When I was a young child, I spoke only French when I started school. I had a hard time. I was lucky to be able to get educated and retain my culture. I am French-Canadian and not Cajun. Our families are not learning enough French. My son understands it, but I never spoke to him in French because I did not want him to have a hard time. [LA-DA-024, French-Canadian educator]

Despite the pressures to keep youngsters off the boats and in the classrooms, some of those who have remained in the boat business have continued to pass knowledge along to their children in the traditional fashion. One mariner described how, when his 11-year old son was 2, he put him at the wheel of his supply boat as he pulled up next to a rig. Yet, that same father proudly boasted of his son's academic achievements and argued that his son must be successful in school and continue on to college and off boats to survive. He expressed angst as he talked about his family's tradition onboard boats (he and his wife were raised on the water and his oldest child was conceived at sea) and the need for his son to have different career options. Indeed, as parents encourage their children away from maritime occupations and Federal policies hasten the exodus of Cajun mariners, a key aspect of Cajun culture is threatened. Whether the schools can replace the informal education with which local youth at one time entered maritime occupations remains to be seen.

The future of south Lafourche Parish and its involvement in OCS is uncertain. Tied especially to the maritime aspects of OCS-related activities, the community has made significant commitments to the offshore oil and gas industries. Yet, negative experiences of one generation have proven to have affected the next one. Box 7.6 (at the end of Section 7.2) explores those effects. The following section highlights some similarities and differences between south Lafourche Parish and the north Coastal Bend of Texas.

7.2.6 Comparison to North Coastal Bend, Texas

South Lafourche is one of numerous coastal communities that have been heavily involved in OCS activity. This section briefly compares south Lafourche Parish to north Coastal Bend, Tex. (San Patricio County), a community that experienced a similar history with a transition from maritime to oil and gas industries (see Figure 1-5 for a map of San Patricio County). In recent years, though, the communities in the Coastal Bend have more successfully diversified away from offshore oil, primarily to military and tourist activities (see Section 6). Chemical and manufacturing plants that were built along the Nueces River still operate and have participated in school-to-work programs. Yet, overall, the education and training programs in the community have been less focused on meeting the needs of local employers than those of south Lafourche Parish. Although both the military and the tourist industry employ many workers, neither has become involved in recent educational initiatives to any great extent. The military requires a mobile workforce, and programs such as the Junior Reserved Officer Training Corps (JROTC), which began in 1916, have sought to go beyond geographical location by offering training on high school campuses nationwide.

The community of north Coastal Bend is defined as the catchment area for Ingleside High School. For this study, information also was gathered from neighboring Aransas Pass because the two communities are separated by only 6 miles, there is significant occupational interaction between the two, and efforts have been underway for many years to merge the two small high school districts. Rather than provide a detailed discussion of work and

education in this study area, this section highlights similarities and differences to south Lafourche Parish.

Ingleside's involvement in oil began with the construction of the Humble Refinery in 1928. While many men went off to fight in World War II, local women worked at the refinery to keep it operating. The refinery stayed open until 1945 and provided jobs for local residents until then. After the war, some of the former refinery workers were able to return with the knowledge and experience they had gained in the war and open their own businesses. In the 1960's, in reverse of the pattern in which the oil industry originally moved from Texas to Louisiana, OCS activity came in from Louisiana as boat companies and fabrication yards, many operated by Cajuns, crept down the Texas coast. OCS activity therefore evolved in Texas in communities that already had extensive histories of onshore oil and gas production. In addition, the Coastal Bend became an important link in the Texas chain of petroleum refineries and chemical plants.

The Coastal Bend economy experienced a slight slump in the 1950's, but it remained strong into the 1980's without "the radical peaks and valleys like they've had since then" [TX-DA-053]. Like south Lafourche Parish, north Coastal Bend declined as a shrimp port during this period and OCS-related work began taking the place of shrimping. Though the boost to the economy was welcomed, the shift to industrial activity created permanent changes in the coastal zone.

> With shrimping, the economy started growing. The buildings started going up. More people started coming... Back in my younger days, it would get more congested. On Saturday night, we had a street dance. They used to GIVE you headed shrimp with beans. Now you have to pay for it. As the economy started growing and people started coming into town, there was a lot of violence. They started closing the street dances. The shrimp and pinto beans fell -- our family used to get ours together and go home and mom would make a shrimp salad... The weekends where there was nothing to do, we would come walking home at 9 or 10 at night. We were safe. People were walking on the streets... A lot of tourists came and would stay here. Port Aransas beach was built up. Then there were the construction sites -- we had Baker Marine, PBI -- a lot of construction companies were going up on [the highway]. People from as far away as Falfurrias would come to work. Then the companies started shutting down. I know a lot of people who moved back home to find work. Those two construction companies kept us busy after shrimping was going down. [TX-DA-054, Hispanic secretary]

A significant portion of the coast housed numerous satellite plants and offices for companies headquartered elsewhere. During the downturn of the 1980's, many of those companies drew their people and equipment back to their home offices, and few returned even as OCS activity picked up in the 1990's. The chemical companies hire a specialized workforce, and the

turnover is low. The other major plant, Reynolds, is unionized so employment is controlled by union contracts.

> We hire in groups, not ones or twos. In 1990, when we hired and advertised, we required at least 2 years of college or equivalent industrial experience. Technology has improved so much. Everybody on the site has to be able to at least use a terminal. That wasn't the case in the 1970's and 1980's. Now we are looking for people with a higher educational level. 1993 was the last time we hired. We have almost no attrition. When we hired, we had no difficulty finding people... Our only competitor for our labor force is [another chemical company]. [TX-DA-026, chemical company manager]

In contrast to southern Louisiana, in the late 1980's the promise and final arrival of the Naval Station Ingleside and several linked shipyard operations and other contractors that relocated to service the installation helped revive and diversify the economy. Though the base has been more successful in bringing new people to the area than providing jobs for the ones already there, it has offered a local option to some people who could no longer make a living in shrimping or OCS-related activity (see Section 6). The base is one of the Navy's newest generation of "strategic homeport bases" that were designed to give personnel sufficient opportunities for jobs that they can stay in the area and to have very limited facilities on base to maximize reliance on the local community for homes, schools, and shopping. Housing developers and educators have been affected by the increased population, but the only curriculum change has been the development of puppet shows for students prior to the departure and return of their military parents. The arrival of the Navy did contribute to a State decision to improve the highway to Corpus Christi, and the proximity of the area to Corpus Christi has meant that a significant proportion of the workforce commutes outside the community for work. Together, those two events created recent social change.

> I came to work here in 1991. They had already built some things, but it had not been opened up. Ingleside has been traditionally a very small country town with kind of a closed society in many ways. People almost look on strangers as outsiders... At that time it was a very little community. In the years since then, it has really boomed in many ways, though there is still not a lot of commercial activity... The place is still, talking to the old timers, very country, simple. Most of them are not highly educated. [TX-DA-044, social service program director]

By the 1990's, some coastal harbors and coastal properties were being replaced by housing developments and condominiums and developers were seeking to attract retirees as well as people coming to the area to work. Consequently, when OCS-activity began to pick up in the mid-1990's, it offered a boost to the remaining shipyards and fabrication yards, but it did not have the dramatic effect on the local economy that it did in southern Louisiana.

Despite the muted effects of the renewed OCS-activity of the 1990's, local employers expressed concern about the workforce that mirrored those heard in south Lafourche Parish. Those in OCS-related work compared the upturn to the earlier periods.

> Of course, the labor that I would be looking for would be very skilled. It's been my experience that most of the good ones in my line of work have jobs. Most of the ones floating around that think they're machinists are marginal at best, or they would have jobs. I am afraid to hire anybody. First, putting people on expensive equipment, they mess it up and cost you money. Second, there are people floating around looking for someone to waylay with a lawsuit. Something like that could wipe you out... The people I have here, one has been here 36 years, the other almost 30. The way things are, I'm almost terrified of taking a chance. My friends have done it [hired new employees] and had problems. I had problems in the past. When things were booming in the late 1970's and early 1980's, we didn't have the kind of legal problems you have today. It has really hurt the shrimping industry. You have lawsuits over nothing, over something that was their [the employees'] own damn fault... The cost of insurance is so high. [TX-DA-053, small business owner]

Some of the differences between the Coastal Bend area and the south Louisiana communities reflect historical and cultural differences between Texas and Louisiana. There is, for example, less of a cultural imperative to remain in the Coastal Bend region than in south Lafourche. Out-migration from Coastal Bend is more viable given the weaker sociocultural heritage of the area, the strong urban Texas economy, and the diversity and quality of educational opportunities available in that State.

Young people, like those in south Lafourche Parish, witnessed the effects of an unstable economy, layoffs and downsizing on their families and community. They were expected to finish high school and were encouraged to go to college or into the military. Once educated, though, they were likely to stay away from the community, even if for a short time, in search of better opportunities. Although many young people return to the area, there is less of a sociocultural imperative to remain in the community than in south Lafourche Parish.

> Both of my kids are through college and gone from here. They don't want to live here. I don't blame them. In their line of work, there is nothing for them around here... I think it is [typical]. You see more and more, especially if they go off to college, get their degrees, they are offered jobs with bigger companies. Especially in a little town like this, you see more and more of them [going to the cities]... That's where the opportunities are. [TX-DA-053, small business owner]

The need to compete pervades discussions with residents, employers, and educators.

> Person 1: There are rumors of [one of the large companies] shutting down. If they shut down, it would be the same thing all over again. My boss is the safety manager out there. He didn't graduate from high school. He has been out there so long that he has moved up. He is the number one safety manager out there. He is now in his mid-fifties. If they shut down, he will be whooooo... I think the pace of everything is going too fast now. You'd better get in the game or you'll be left out.
> Person 2: You're either in or you're out. It is not like maybe one day I'll go work for [one of the chemical companies].
> Person 1: Not even degrees help nowadays. They're important, but everybody's getting them. You have to stand out from the others. [TX-DA-055, 056; students]

Culturally and demographically, the population of Ingleside and Aransas Pass is less homogeneous than that of south Lafourche. The community has been predominantly white since it became home to ranchers and cattlemen in the 1800's, but some of its Hispanic residents have lived there a longtime. Hispanic segregation, though significant, has been more subtle than that of Mathis residents in the western part of San Patricio County (see Section 7.4).

> Back then the majority of Hispanic women worked as maids. It was hard to get an office job. We had to work at anything we could -- nursing homes or maids. Those were the only types of jobs for us. All the owners -- of the department stores, etc. were male. I think now women have the upper hand or even equal. We've got office jobs we can work in as well as car salesmen, pest control women... Anglo women had more like a secretarial office job. You'd go into these establishments where you'd never see Hispanic women -- only at [the grocery store could the Hispanics work]. Nowadays you go in the schools and see them work in the office... I worked as a maid in Port Aransas. Then I went to [...] school. I got a job at a clinic. All the women who worked there were Anglos. For years people told me I'd never get a job there. There was no way they would hire a Hispanic. It took a lot of praying... [TX-DA-054, Hispanic secretary]

Texas' education system, though riddled with its own problems of low student achievement and racial inequality (see Section 7.4; Murdock et al., 1997), was more advanced by World War II than that of southern Louisiana. Then, Texas pushed business/industry and education alliances more aggressively and sooner than did Louisiana. In contrast to Louisiana's parishwide school districts, Texans fought consolidation and retained independent school districts, usually at the city or town level. Ingleside and Aransas Pass each have their own school districts, complete with boards, policies, and calendars, and efforts to consolidate them, even for the sake of the sports program, have failed. Aransas Pass' district extends into three counties, and such jurisdictional overlap is an issue in all local decision making.

Educational programs must incorporate multiple school districts of varying sizes, and this makes implementation of programs, such as school-to-work initiatives, challenging.

In contrast to south Lafourche Parish, the onshore petrochemical industry was much more influential in the development of vocational education programs than the offshore industry. Like in south Lafourche Parish, opportunities for post-secondary education were limited until improved transportation and access to personal vehicles enabled students to commute from their homes to the nearest community college. Other areas of Texas, particularly Galveston and Houston, established training programs for roughnecks and fabricators. Though there were a few such programs in Corpus Christi during the boom, they disappeared soon after and show no signs of returning. Also in contrast to Louisiana, Texas developed both community and technical colleges, and the relationship between these has varied over the years.

Due to the efforts of Corpus Christi residents, the State Department of Education approved the establishment of Del Mar Junior College in 1935 as one of 17 municipal colleges in Texas. From its beginning, Del Mar's curriculum included "academic courses and a number of vocational courses and special courses" (Kost, 1984). The college opened with 154 students and experienced significant growth following World War II with "the 'blue and silver wave' of war veterans who washed over Del Mar in the fall of 1946" and dominated campus life (Kost, 1984). Supported by the GI Bill, the new students brought resources to the campus and created demand for new programs; a major challenge was trying to continue to operate the new programs after funding stopped. Due largely to the petrochemical industry, the college was able to find alternate resources. In 1958, with the National Defense Education Act initiating a new era of expanded Federal funding for vocational education, a new campus was added to Del Mar and the junior college and technical institute were split (Kost, 1984). As technical education has evolved in Texas, Del Mar has maintained both campuses and has been able to adapt to shifts in educational policy (see also Section 7.4).

> [What kind of policy changes affected Del Mar?] The only thing I can think of is the G.I. bill. When the eligibility of the veterans played out, we had to find another means of supporting them. We still had students wanting programs, but it was hard to turn people away. Industry helped, like the instrumentation program. We borrowed instruments from industry to be used in night classes. Students would wear those instruments out taking them apart and putting them together again. But we didn't have the money at the time for the instrumentation lab. [TX-DA-058, retired educator]

San Patricio County students have attended other post-secondary institutions, but Del Mar has had the highest enrollment. Texas A&I, a 4-year university, was the most common university destination. For example, in the fall of 1967, 42 percent of the San Patricio County students in area institutions were enrolled at Del Mar, 3 percent were at the University of

Corpus Christi, 40 percent were at Texas A&I, and 14 percent were at Bee County Junior College (HB&A 1968).

Because of the more diversified economy, the ease of commuting to Corpus Christi, and the tendency of young people to want to leave the community, education and training programs have been less focused on meeting local employer needs than in south Lafourche Parish. This has occurred in the school-to-work and Tech Prep programs which include industries identified by regional committees and pull students and employees from several districts. Participating businesses and industries nevertheless have been actively involved in the development of curriculum and programs. The Texas legislature has pushed educators to make programs more rigorous, especially for the non-college bound, but the career and technical programs have been unable to attract high achieving students.

> Our problem in Texas has been the change to career and technical education. For so long in Texas, vocational education was associated with the low kids. It was the dumping ground. We're suffering from that.... We are getting blasted at the State and Federal level... because they're afraid we're going to water down the curriculum. That's not true at all. The Texas Education Agency has [established] standard and vocational core classes. In Tech Prep we push the recommended core... The other thing we've got to get the high schools to do is to stop pushing kids toward the university. Only 20 percent of jobs require college. We're really dooming some kids by doing that...[TX-DA-045, vocational educator]

Clearly, though both south Lafourche Parish and northern Coastal Bend followed similar development trajectories from seafood to offshore oil and share many characteristics, the differences in the communities today are significant, and OCS-activity is a major contributor to those differences. In both communities, negative experiences with OCS-related work have caused residents to be reluctant about participating in the industry. Due to the greater economic diversity of the Coastal Bend and, therefore, greater potential opportunities for employment, educators and community leaders have not focused on OCS-related occupations as they have in south Lafourche. Nevertheless, both areas have faced problems keeping young people in school and providing local options to educated youth. Those and other issues will be explored in the remaining sections in communities with different development histories and then discussed in the conclusions to this section.

Box 7.3. The Demise of "Separate but Equal"

Fundamental to southern life and education was the doctrine of "separate but equal," established in 1896 in the Supreme Court case, Plessy v. Ferguson, which, although it involved transportation, was broadly applied. The concept, as it related to public education,

was ruled unconstitutional by the U.S. Supreme Court on May 17, 1954, with the conclusion of the Brown v. Board of Education case (see Kluger, 1976). The court concluded,

> *Today, education is perhaps the most important function of State and local governments. Compulsory school attendance laws and the great expenditures for education both demonstrate our recognition of the importance of education to our democratic society. It is required in the performance of our basic public responsibilities, even service in the armed forces. It is the very foundation of good citizenship... Segregation of white and colored children in public school has a detrimental effect upon the colored children. The impact is greater when it has the sanction of the law...*

Throughout the South, reaction to this decision was negative, and often hostile, but the degree of hostility varied widely. Those States, such as Texas and North Carolina, that were able to give the appearance of compliance without the reality were most successful in delaying school desegregation and avoiding the violence and negative publicity that resulted in quick Federal intervention and negative economic consequences. States such as Louisiana and Alabama that openly resisted, sometimes with violence, generally brought the full force of Federal law (and in a few instances, of Federal troops) and earned the reputation of sacrificing school systems and the children they served for the objective of maintaining white supremacy. It is not surprising that, nearly a half century after the Brown decision those southern States that projected the appearance of moderation fared best in the economic competition that resulted in the Sun Belt boom. State and local leaders actively challenged and resisted implementation of Federal orders that were issued to force compliance with the decision (e.g., Ladino, 1996; Eddins, 1997). Responding to and inflaming public outrage over the decision, leaders became increasingly defiant and rushed to enact legislation, build new schools, and ban the National Association for the Advancement of Colored People (NAACP) from their States, all in an effort to avoid compliance.
---- end Box 7.3

Box 7.4. The Interaction of Industry and Federal Policies Related to Mariners

Significant changes in the maritime industry serving offshore oil and gas activities in the Gulf of Mexico began in the mid-1990's. Because of numerous Coast Guard regulations and license requirements affecting boat personnel, the specific maritime training industry that had developed alongside the boat industry also was impacted by changes. With the upturn in offshore activity, the training industry underwent a similar pattern of mergers and consolidations as that observed in the boat industry, and special relationships and alliances were developed between boat and training companies. The large boat companies either formed alliances to guarantee their employees access to training or began to create their own training facilities.

> *[Training Company A] has a training alliance/training partnership with [Boat Company A]. It is a structured alliance (meaning [Boat Company A] must use [Training Company A]). We have other companies with whom we are partnering, but do not have an alliance. We are partnering with them, but they are free to go to other providers. [Boat Company B], all the major ones in the Gulf of Mexico, we have some type of verbal or unofficial agreement to provide from basic to engineering training. [LA-DA-073, marine educator]*

Although specific maritime training began to be required in the 1970's, new U.S. Coast Guard regulations, related to the 1995 revision of the International Convention on Standards for Training, Certification, and Watchkeeping (STCW-95), established new training requirements for seafarers. The convention concentrated on areas related to people, training, and operational practices. Limitations to the 1978 STCW convention, and particularly inadequate criteria for insuring fitness of watchstanders and for minimizing the role of humans in maritime casualties, led to the 1995 convention. Although STCW is not a product of OCS activity, its application to personnel working on offshore vessels will have a tremendous impact on the individuals and the industry.

The amendments to STCW were adopted in 1995 and entered into force February 1, 1997; all provisions except those tied to individual mariner certification became effective as of that date, and full implementation is required by February 1, 2002. According to a transitional schedule that allows the most time to mariners holding valid licenses, between 1998 and 2002 all personnel must obtain a STCW-95 certificate to work offshore. The convention establishes standards of competence for numerous tasks typically performed by mariners at each grade level (e.g., able bodied seaman, engineer, mate, captain) and requires assessments of that competence. It also requires basic safety training for all mariners. The amendments require deck officers have training on the use of automatic radar plotting aids and global maritime distress safety systems.

Like in many other regulated licensing and certification programs whose requirements are fulfilled by passing a course and/or examination, practitioners have questioned the capacity of the courses and exams to teach the requisite skills and identify those capable of doing the job for which they will be licensed or certified. Mariners are concerned that simulators could replace experience on the open water and express concern for safety. While some who may be able to pass courses and tests but lack experience will certainly pass through the system, a significant fear in southern Louisiana is that many experienced and licensed mariners will be unable to pass the courses and tests and thereby become unable to work. As late as the end of 1998, confusion and uncertainty surrounded STCW-95. A lack of locally available and public courses and the provision of courses through private training schools participating in alliances exacerbated concerns about cost as well.

> *The big difference will be in the record books and the required schools they'll have to go through. The costs for any one are upwards of $1,000 or more. Most*

> *mariners down here can't afford those type of schools... Down the bayous they have a problem with reading. With the new STCW regulations and schools and stuff that go along with it, I don't foresee any way they (the mariners) could meet that requirement... It will be hard for them to do. As soon as a person gets his mate's license, he will try to pick up his master's license while performing the duties of a mate. He will have to be finding time to do the things he needs to do to demonstrate expertise. Unless a company had one designated examiner on every boat, there will be problems. [LA-DA-074, Coast Guard officer]*

In addition to classroom training that has been developed to address the requirements of the new regulations, STCW-95 established performance objectives that must be met by boat personnel. Successful completion of those objectives must be verified by Coast Guard designated examiners who will ride the boats with the crew and do performance assessments while the boat is underway. It is anticipated that only the large boat companies will be able to afford such examiners, and no mechanisms have been put in place to assess personnel working for companies without them. Some locals have begun to fear they will eventually lose out in the race to keep ahead of technological changes and the tests that are created with the intention of weeding them out. Industry efforts to reduce and realign the workforce, frequently by eliminating older workers who lack technical skills, have intensified these fears.

> *The scary part is that in 10 years, will I know enough to hang on to my paperwork? And I know how to do the job...The first time out, I was tying up to a semi-submersible jackup rig. I didn't even know what they looked like. I had no idea what I was going and servicing. Why don't they teach and test on that? There is no practical reality in [what they test]. For the 100-ton license, you are not required to take firefighting. [LA-DA-040, boat captain]*

> *Those people, if they are working offshore, their only alternative is to work inshore. Other than that, they have to find a different industry, and they don't know anything else. And they are probably some of the best out there. They started driving boats when they were kids. [LA-DA-074, Coast Guard officer]*

The combined changes in the industry and in the licensing and certification requirements for mariners are likely to impact southern Louisiana's boat industry in two major ways: (1) making it increasingly difficult and practicably impossible for small boat companies to operate; and (2) decreasing the power of individual mariners while increasing that of companies. Larger boat companies are in a position to hold prices low and force smaller boat companies out of business. Even without such calculated actions by the larger companies, small boat companies likely will be at a great disadvantage due to difficulty finding and retaining employees who have the necessary STCW-95 endorsement. Without the resources or economies of scale needed to operate their own training programs, the only option available to these companies is

to pay the rates currently being charged at the one training school that has been approved to offer the courses. If they do not train and provide certified performance monitors for their employees, they either will go out of business due to their failure to find and keep employees or will be forced to pay higher salaries to mariners who have all the necessary certifications prior to coming for employment.

> *The small companies are probably going to suffer the worst. The training companies will put together complete training programs. The small companies will have almost no choice but to go through their programs. There is no doubt that a lot of the small companies are going to get hurt and probably will sell out to the larger ones. Or they will have to offer more money to get qualified people who got qualified from the larger companies. [LA-DA-074, Coast Guard officer]*

At the time of STCW-78, the most recent changes in maritime regulations prior to STCW-95, the special needs of the offshore industry led to the development of specific licenses for individuals who only worked there. The benefits of establishing a special category under STCW-95, which would lock mariners into working in part of the gulf and preclude work on the large vessels being developed for deepwater, are uncertain.
------ end of Box 7.4

Box 7.5. Bayou Region School-to-Work

Lafourche Parish is one of four parishes within the Bayou School-to-Work Region. In the Bayou Region, school-to-work has been added to the existing Tech Prep program so there has not been a significant discontinuity in the program. Under Federal guidelines, each school-to-work program is directed by a community advisory board made up of representatives of business and industry, labor, education, and economic development organizations. Because there are no unions in Lafourche Parish, the union representative comes from New Orleans. There is widespread participation on the advisory board, with regular attendance by all the major industrial interests, the technical colleges, Nicholls State University, the school districts, and the South Louisiana Economic Council. The programs are focused on two areas: fabrication and healthcare. Several large local industries, including shipyards, marine and agricultural fabrication facilities, and boat companies, have been instrumental in shaping and implementing the program. The large companies have produced videos that are shown in daily 5 minute segments to all junior high students in the region during their homeroom classes. In 1997-98, the industries and schools achieved their goal that every eighth grader in the region would have an opportunity to tour a local business, either a shipyard, a fabrication yard, or a local hospital. Students and teachers also participated in the job shadowing program wherein they spend from a few hours to a week in the direct company of an employee at work.

Another element of the Federal program, and one that the Bayou Region has put in place, is that every student must have a career plan in place before leaving the eighth grade. The school-to-work program administers interest inventory tests to help youth identify a career path from a choice of four offered in the district. The career paths in the Bayou Region are business and marketing, human services, engineering and technology, and the arts and fine arts. School-to-work advocates have worked very hard to enlist the financial and ideological support of the programs so they outlast the Federal funding.

Within the Bayou Region, the participation of south Lafourche Parish businesses and industries in education and training is recognized as extraordinary. Activities extend beyond the bounds established by the Federal initiatives. The tremendous need for employees, the desire to keep young people in the community, and the need to overcome the negative local images of the oil-related work serve as special incentives for industry participation. Once decisions are made, the tight social networks make it possible for action to soon follow. In addition, the family-owned businesses have the flexibility to make rapid decisions to dedicate resources to a school or program. Recently, several boat companies joined forces to create a marine operations program. The facilities, built by local companies with materials donated by other local companies, include: (1) a galley where they teach food preparation and serving; (2) a bridge that includes equipment for steering, short and long wave radios, a computer to control pitch and yaw, and radar; and (3) a classroom where students receive instruction. Community support for the programs has been strong, although at least one of the smaller boat companies has recognized that the individuals trained through the program will be available only to the companies who financed it.
------ end of Box 7.5

Box 7.6 Boom/Bust Shadow

South Lafourche Parish's response to the upturn has differed in significant ways from that of the 1970's due to what can be described as a "boom/bust shadow." This shadow does not merely reflect societal changes, such as the increased concern about the environment in the region or the reduction in overt ethnic segregation, that have occurred since the 1970's. Instead, it can be identified as specific responses to the upturn in OCS activity that result from having experienced the major boom and then bust of the 1970's and 1980's. Although those involved in the offshore industry acknowledge small downturns as normal in the economic cycle, the boom/bust shadow has heightened awareness of and response to those downturns. Despite the argument that the boat and fabrication companies are not building on speculation as they did during the first bust, but are only building when they have a long term contract, some residents see a return to the earlier patterns. Expecting a downturn, these individuals express concern. The restructured industry consisting of fewer, larger operators and the absence of any real rise in wages contributes to the worry.

> *Now, I'm kind of concerned. They're building quarter of a million dollar homes. What will happen if it goes down? They'll be sunk. Now there's no rats*

> *[for trapping], no fish. People can't go back. The real wealth down here is being accumulated by very few people -- they are becoming billionaires. The last time [during the bust] people lost a lot. People built too much. Then the bottom falls out of the business and you're gone. I'm afraid about the future. This [the oil] is a dead end. What happens when this goes? During the oil boom of the 1940's, when they started offshore, it seemed there was no end to it -- but it ended.... The concentration of wealth, this should be looked at. [LA-DA-011, retired oil worker]*

> *Boat owners make money by underpaying their employees. Boats here make more money than boats on the East Coast, but wages there are 40 to 50 percent higher than here, due to the unions. Workboat magazine says the shortage of workers is due to job security, but it's really about pay. With low wages, it's just not worth coming back. Lack of respect for licensed personnel is also a problem. In California, people use the title "Captain." It's on mail boxes and in other places and is a sign of respect. Here, there is no respect for captains. This starts with the boat companies. In the companies' eyes, the captains are just here to fill a void. There is no respect whatsoever. They're treated like ditch diggers. [LA-MN-007, boat captain]*

Although not as poignantly, personnel directors from some of the local boat companies acknowledged that the industry had lost a generation of captains with the bust and had significant work to do to attract young people.

Many employees recognize the upturn will not last. Some are taking a conservative approach and maintaining alternate occupations, such as carpentry and fishing. Others appear to have decided to simply enjoy it while it lasts; they have raised their income expectations and have come to count on overtime pay. Consequently, much of the response by industry to create new programs and find new ways of attracting young people, as described earlier in this section, is necessary at least in part because of the shadow. In 1997, after several years of upturn, some educators were noticing change.

> *Now, the fear has lessened a lot, and students are getting back into these positions. Now we have people moving back in. We've been working with business and industry for the last 7 to 8 years forming partnerships with the universities, the vocational schools, business and industry. Doing what we could do to improve the type of workers they were getting. [LA-DA-050, white educator]*

The field work for this study ended in June 1998 and cannot evaluate the impact of the latest downturn, which began to have significant effects in the community in the summer of 1998.

Given the tenuous nature with which some reentered oil and gas, the improved attitudes toward the industry may be short lived.

Many individuals and companies are resisting a return to the industry. There has been a trend in the industry to consolidate firms through mergers and acquisitions and of downsizing to reduce redundancy in newly consolidated firms and to reduce costs. There is some reluctance of those whose jobs were downsized to re-enter an industry with such trends.

> *When people went into the oil industry early on, they imagined that they would be working in it until they retired, but the bust showed them otherwise. They're still laying people off through early retirement. [...] is reducing 150 people this way. They are about 50 or 55 years old and the other parts of their lives are not ready for retirement. People want stability and they don't think the oil industry will give it to them. The work schedule is also a problem. [LA-MN-003, boat company owner]*

> *In the 1980's, the bust affected education through the amount of money that was brought in. Lots of people moved out. [...] and the people who built the rigs just let the welders and other workers go. Now parents are saying, don't go into that because it could happen again. That's why you have labor shortages, because the industry went down so fast. Welders, welder fitters, they looked at different careers. [LA-DA-050, white educator]*

> *Human resources personnel argue that having to let people go is painful for them as well as the employees, so they have not hired back to pre-bust levels. Wasteful practices that were legendary in the 1970's and early 1980's have been curtailed.*

> *The community is trying to maintain the diversity acquired during the downturn, although when that diversity lies only in the source of contracts it has proved to be problematic. Examples of diversification include Federal government contracts to build Coast Guard vessels and the rise in charter boat and recreational fishing. According to one charter boat captain, it's all become just too efficient, whether fishing, crabbing, or trawling.*

> *With 30 charter boats pulling in 30 redfish each, or with the new skimming nets, which let shrimpers work many different water zones, or crab pots which work 24 hours a day, there is going to be depletion. Commercial fishing is a difficult job. The economics are tough. When the catch is plentiful, the prices are low. If the catch is poor, the prices are high. [LA-MN-003, boat company owner]*

Local officials argue, though, that there is a difference between recreational fishermen and trawlers; trawlers spend money in town, but recreational fishermen do not.

Local business owners argued that banks became more reluctant to loan money after the downturn. During that time, also, national banks took over a number of the local, hometown banks. The national banks are perceived as being less willing to lend money than the locally owned banks. Yet, even the local banks are said to be more cautious this time around.

------ *end of Box 7.6*

7.3 Internal Communities: Industrialization in Agricultural Economies

This section focuses on industrialization in communities in which agriculture was dominant prior to World War II. In these communities, as elsewhere in the South, mechanization in agriculture caused dramatic changes in the nature and scope of agricultural work and occurred at the same time as industrialization. The communities are further inland than those described in Section 7.2 and were less involved in offshore oil and gas activities. Although many residents of these communities have traveled to neighboring communities to work in shipyards and fabrication yards, and have worked offshore where possible, the communities themselves host few OCS-related industries. Thus, this section provides a comparison to the OCS-dominated economies and helps distinguish the unique impacts of OCS activity. Key elements of local occupational and educational histories are shifts in agricultural production, mechanization, industrial development, and school desegregation.

The central community of this section is Theodore, Ala., in which an industrial corridor has come to dominate the local economy (see Figure 1-7 for a map of the area including Theodore, Bayou La Batre, Mobile, Coden, and Mobile Bay). Theodore's proximity to the City of Mobile has affected its development, so issues of concern within the city have been included here where relevant. Although it had been a settlement before, Theodore gained formal identity when it obtained a post office. Then, until the development of Theodore Industrial Canal (see Section 6), it remained little more than a collection of small businesses and farms. As an unincorporated community, it always has depended upon county services, including educational systems, and has been heavily impacted by the policies and experiences of the larger political units in which it exists. Industrialization and the demographic changes resulting from desegregation in the City of Mobile were leading causes of change in Theodore between 1945 and 1998. Both were the result of actions and policies beyond the control of Theodore residents and had implications for both work and education. For example, the City of Mobile's Industrial Development Board (IDB) was granted authority over county lands extending to and including Theodore and committed the community to large-scale industrial development while excusing industry of financial obligations, including school taxes, to community residents. Likewise, Theodore is located in Mobile County and, therefore, part of the Mobile Public School System, whose boundaries are congruent with those of the county. The school system is the largest in the State of

Alabama and has been the area's largest employer (Mahan, 1979). Theodore High School, located outside the area impacted by forced desegregation, was a key factor in the development of Theodore, and the study area was defined as the catchment area for that school.

This section is organized into three time periods of importance to the evolution of Theodore: (1) prior to industrial development (pre-1965); (2) industrial development with minimal compensation to the community (1965 to 1989); and (3) the beginning of local demand for accountability in business and industry (1990 to 1998). A brief discussion of Schriever, La. is provided at the end of this subsection. Schriever's history has elements similar to Theodore's, and those similarities and significant differences are highlighted. For example, Schriever is located in Terrebonne Parish and has been dependent on oil and gas revenues for much longer than Mobile County.

7.3.1 Prior to Industrial Development (Pre-1965)

The industrial revolution arrived relatively late in the South; significant development did not occur in many areas until World War II. That war brought billions in Federal funds, stimulated a significant migration from farm to city, and overshadowed or disrupted traditional economic activities and communities. Certain elements of southern life, particularly racial and class hierarchies, as well as attitudes toward education, remained intact, at least in the immediate postwar years. An important aspect of the southern wartime and postwar boom was the presence of southern congressmen and senators in key committee chairmanships from which they disbursed projects and funds to their districts.

Like many places along the Gulf Coast, the industrial development of south Alabama began in the 1940's and 1950's. Several military installations established during World War II played a major role in the area's history. For example, Brookley Field, located at the southeastern edge of the City of Mobile, was critical in the development of that part of the city and county. Its 5-year phase-out and closure began in 1964 and, as the county's top employer at the time, had a lasting negative impact on the area's economy. At Theodore during the war, land along the Dog River was condemned and families were forced to move for the construction of an ammunition depot. Unlike elsewhere, the depot was closed after the war and the property was not immediately converted to peacetime use. It lay vacant for almost 20 years.

Alabama emerged from World War II eager to be part of the southern industrial expansion (see Section 2, Bartley, 1995; Roland, 1975). In 1949, the Alabama legislature created Industrial Development Boards (IDBs), modeled after Mississippi's 1936 Balance Agriculture With Industry (BAWI) program, to attract industries to locate in Alabama to create jobs. Projects financed by the IDBs would be exempted from paying property taxes until their bonds were retired. During the 1950's, Mobile began to attract the chemical industry and, by 1960, 10 percent of the city's manufacturing employment was in the

chemical industry (Schulte, 1961). Mobile's IDB was set up by the Mobile City Commission in 1962 and authorized by State law to reduce or abate property and sales taxes on sites up to 25 miles outside the Mobile city limits. The first attempt to foster development of an industrial park at Theodore occurred in 1965.

Prior to World War II and the identification of Theodore as more than a train stop, agriculture and fishing were the dominant attributes of south Mobile County's economy. For example, plant nurseries began in the 1920's, but the horticulture industry received a major boost when individuals returning from the war established businesses. A few families owned the majority of the land around Theodore and remain influential there. The remaining residents, both black and white, had limited economic resources. Cotton was a major crop, and the labor was supplied by black and white sharecroppers.

Prior to the war, salaried jobs were few, and, according to a longtime resident, working on the county roads through the Workers Progress Administration and teaching school were the only ways to earn a paycheck within the area. Local residents commuted to work at the air base, in the paper mills, and at other locations in Mobile. War-related industries, such as the Ingalls Shipbuilding Corporation in Pascagoula, Miss., also drew south Alabama workers and began a pattern that would continue to the present (Couch, 1964). The population and character of Theodore remained much the same until 1965.

South of Theodore, fishing communities, such as Bayou La Batre, dotted the Alabama coastline. Their histories are similar to that told in the previous section, with shrimping, oystering, and boat building giving way in part to servicing the offshore oil and gas industry beginning in the 1960's. This section looks north of the coast, at Theodore, where few mariners and their families have lived. The distance to the coast has been sufficient to give Theodore a distinct developmental trajectory.

Theodore's population included early settlers from many areas. For example, Swedetown Road was the center of a community of Swedes who migrated from the northern United States at the turn of the century. By World War II, the most significant distinction was the separation of blacks from whites, and Alabama's racial intransigence reflected the general steadfastness of whites in the Deep South to resist desegregation. The U.S. Supreme Court opted to make schools the focal point of desegregation throughout the country when it handed down its 1954 decision, *Brown v. Board of Education*, and educational institutions have been central to integration since. After the Supreme Court decision, Alabama's governor "officially declared it to be State policy to offer massive resistance" to the desegregation decisions, and the State legislature passed resolutions nullifying them (Foley, 1981). Even after the acts of resistance by Alabama and other southern States were invalidated by the Supreme Court in 1955, the Mobile County School Board issued a policy statement arguing that integration was unacceptable to its constituents and affirming its intention to continue racial segregation. Alabama voters adopted a 1956 constitutional amendment giving the

State legislature the power to abolish public schools if necessary to prevent integration, authorize the use of State aid for private segregated schools, allow counties and cities to sell or give public schools to private entities that would operate them as segregated institutions, and give parents the freedom to send their children to segregated schools. Alabama's Pupil Placement Law, passed in 1955 and amended in 1957, did not explicitly mention race as a criterion for placement in schools, but black leaders argued that its intent was to continue the State's system of separate schools for blacks and whites. Under the law, no black student was admitted to an all white school in the Mobile area between 1958 and 1963 (Foley, 1981).

Alabama was notorious among southern States for racial intolerance, and it was a center for Klan activities (Sims, 1978; Chalmers, 1981) and a charter State for the White Citizens councils. Although the activities of Theodore's Ku Klux Klan have been generally unknown compared to the well known bombings and racially motivated murders in other parts of Alabama, residents and documentary accounts have recalled cross burnings and other Klan actions. One of the first challenges to racial segregation occurred in 1956 in the Dog River area near Theodore when a liberal, white upper-class woman asked the Mobile County School Board to permit her adopted black daughter to attend the all white neighborhood school near their home. The school board denied the woman's request, and an article about it that appeared in the local newspaper was sufficient to incite action.

> The Ku Klux Klan, which had been revived in the local area as the Gulf Klans Inc., and other local antiblack zealots, embarked on a campaign of terror and intimidation aimed at this new target. Within a few days they organized a motorcade of a dozen and a half cars and trucks that journeyed out to the fashionable suburb and burned a cross at the entrance to Mrs. DaPont's riverfront home. They initiated a telephone harassment marathon against Mrs. DaPonte and her relatives. Her uncle was harassed so severely that he had a heart attack on 19 September and died. The cross burnings were featured in the local press and on television and radio. They were also featured in the *New York Post* and in *Ebony* magazine, all of which added fuel to the Klan's fires of dozens of crosses in the city (Foley, 1981).

When the violence escalated, many Mobile residents and leaders turned their attention from desegregation to the Klan. At that time and unknown to most residents, the local National Association for the Advancement of Colored People (NAACP) was working with 30 black parents to prepare a class action suit on behalf of their children who were denied access to the white schools near their homes. However, the governor obtained a State court order prohibiting the NAACP from operating in Alabama. After having no success petitioning the Mobile County School Board to desegregate the school system, on March 27, 1963 members of the black community filed a lawsuit, *Birdie Mae Davis et al. v. Board of School Commissioners of Mobile County*, in the U.S. District Court

for the Southern District of Alabama to end the operation of racially separate and dual schools for white and African-American pupils within the county. Litigation for the case lasted 15 years and eventually was appealed to the Supreme Court. Between 1963 and 1989, the U.S. District Court "entered a series of Orders providing injunctive and other relief designed to eliminate the vestiges of the prior segregated system" (*Birdie Mae Davis Stipulation and Order of Dismissal*, Civil Action No. 3003-63-H, in the U.S. District Court for the Southern District of Alabama, 1997: 1). The 1971 order, for example, covered seven areas: (1) student assignment; (2) faculty and staff; (3) transportation; (4) planned implementation; (5) school construction; (6) student transfer; and (7) extracurricular activities.

In July 1963, the Fifth Circuit Court of Appeals gave the Mobile school board less than a month to submit a plan for the immediate desegregation of Mobile County schools. Governor Wallace issued an executive order against the desegregation in the Mobile schools and mobilized the National Guard to prevent black children from entering Murphy High School, an all white high school. Protests were held at the school, and private schools were opened so Mobile parents could keep their children out of integrated environments. Little progress toward desegregation was made over the next 4 years, and Theodore remained relatively unchanged.

The first institution of postsecondary education near Theodore was the Southwest College, chartered in November 1950 and opened in May 1954 "for the purpose of providing post secondary vocational training for students from the Greater Mobile Area and surrounding counties" (Bishop State Community College, 1998). Classes at Bishop began with an enrollment of 100 students in 8 vocational classes and had quadrupled in 2 years. The school's first graduates came from the Practical Nursing class.

7.3.2 Unfettered Industrial Development (1965 to 1989)

This period was characterized by efforts to bring industry to Theodore and tie south Mobile County's future more closely to that of the City of Mobile (see Section 6). Like earlier attempts in the City, these efforts were derived from a perceived need to attract industry and capital at all costs. According to a county official quoted in the Mobile *Press Register*, "We didn't feel until recently we could be choosy about which industry located here" (Mobile *Press Register* in the *Harbinger*, October 27 - November 9, 1992). In 1965 the Federal government abandoned the Theodore Ammunition Depot and the land became the property of the Alabama State Docks and City of Mobile IDB. The land was designated an industrial park and made tax-exempt in the process (*Harbinger*, October 13 - October 26, 1992). On a 1973 local map, the only identification on the canal was "Bunny Cove." In 1973, Degussa, a German chemical maker, was the first to bring chemical plants to south Mobile County and has been credited with saving the channel, albeit for use as a waste disposal corridor (*Harbinger,* October 13 - October 26, 1992). In 1985, Exxon USA acquired options on land along the Theodore Industrial Canal to establish an operations base for its drilling operations

in the Mobile Bay area and the OCS area off the Alabama coast (*Mobile County News*, February 21, 1985). By the late 1980's, several new chemical plants were located along the canal. Although the industrial plants transformed the landscape along the river, the impacts in Theodore were minor.

> Twenty years ago, they said in 5 years we were supposed to be like Houston. We're not. It's due to the industrial park... Now all we are is a chemical waste area, and they're trying to put in more. [AL-DA-037, longtime business owner]

Theodore's industrial development was planned and implemented by the IDB, whose control lay outside of Theodore. The industrial development aimed to benefit the City of Mobile, and secondarily the county, and the people of Theodore received no special consideration. Likewise, in 1965, the Mobile County Regional Planning Commission was organized to initiate continuous comprehensive planning for Mobile County. It was created and supported by "Mobile County and the cities of Bayou La Batre, Chickasaw, Citronelle, Mobile, Mount Vernon, Pritchard, Saraland, and Satsuma" (Mobile County Regional Planning Commission, 1965). As an unincorporated community, Theodore had no representation on that body (see Section 6 for more discussion on the consequences of remaining unincorporated).

Despite all the growth, industry's impact on the occupations of Theodore residents was minimal during this period. Many residents continued to operate small businesses in the area while others commuted elsewhere. Agriculture remained an important part of the economy of south Mobile County throughout this period. Shifts in agricultural production resulted in a loss of cattle ranches, citrus, and potatoes, the maintenance of cotton and pecans, and an increase in commercial fruits and vegetables. By the early 1980's, residential and commercial development accompanied by a new emphasis on landscaping in and around Mobile and Baldwin counties contributed to an increase in nurseries and sod farms and created a demand for workers. Overall, though, by the 1980's, the number of full-time farmers in the area dropped, and land was converted to other uses. Due to volatile markets, farmers found they needed the steady income and security of a second job. Increasingly, immigrants were brought in to do seasonal farm work.

As has been typical throughout the South, the types of industries attracted to heavy subsidies and low wages offered little for the development of human capital in the area and had almost no impact on local employment. Those industries attracted to the Theodore Industrial Canal, such as the large chemical companies, had specific requirements for their workers and generally brought those workers with them. Like in Ingleside, Tex. (see Section 7.2.6), turnover was generally low. If new workers moved into Theodore to work in the plants, they were outnumbered by the larger influx of individuals escaping Mobile. Even in 1998, few individuals in Theodore knew anyone working at the plants and few of the employees interviewed lived in Theodore.

> [What is the effect of the plants?] Not much around here. Only in construction. Most of them don't do the local economy any good. They've got their own contractors... [AL-DA-037, longtime business owner]

Being largely outside the local economy, the industries were not impacted by labor demands of OCS-related industries. However, parallel to the development of the Theodore Industrial Canal, and of more immediate importance to Theodore residents, was the growth in activity of boat companies and shipyards in southern Alabama and Mississippi. This increase was in response to the demand for vessels to service OCS development. With an improvement in transportation routes, including the completion of Interstate 10 in the 1970's, workers were able to commute longer distances, and laborers were attracted to the relatively high wages offered by the industries. A similar situation occurred in the construction industry, at least a portion of whose fate was directly tied to OCS activity. The up and down turns in that industry responded by and large to the region's economy.

There was a substantial overlap in the pool of potential entry-level workers and craftspeople among shipyards, construction crews, and offshore platforms. Again, due to the tradition and willingness of workers to travel long distances to work, the Mobile workforce became affected by activity taking place as far away as Baton Rouge. In the 1970's, unlike in other occupations, the vast majority of construction work was done in union shops, with only a small portion from merit, or open, shops. Much of the training and apprentice opportunities that prepared young generations of craftspeople were offered through the unions. By the end of the period of rapid industrial growth, however, the pattern had completely reversed and only a small percentage of the construction jobs were completed by union workers.

> I was union for the first half of my time in business... I was a merit shop. We were training for a lot of different crafts. Now we're not training painters. The workers have to come out [to learn the job]. They don't get the training to get out and do the job. When I was union, I made more money then, but you've got somebody telling you how to run their business. [AL-DA-036, construction contractor]

In the midst of the changing economy, many individuals were not successful in shifting from agriculture to other types of work. Public assistance became an option for some. The impacts of the economic changes were not uniform. A 1985 study of Mobile County found that blacks fared significantly worse than whites (Johnson and Matre, 1989; see Table 7-1). That study included city residents as well as those in the country. South Mobile County's population had a much smaller percentage of blacks than the city, but ethnographic data indicate that the conditions for poor families were similar to those reported in the study. Like in south Lafourche Parish, and especially among blacks, strong family ties were critical for helping to buffer south Mobile County residents in the tough times. According to the 1985 study, for example, 95 percent of the blacks and 74 percent of the nonblacks reported having kin in the area (a median of 30 individuals for blacks and 11 for nonblacks). The study

Table 7-1. Selected data from 1985 Mobile County Social and Economic Survey (611 households).

	Percentage of Respondents	
	Blacks	**Nonblacks**
Employment		
Full time	27	41
Part time	11	8
Unemployed	29	9
Retired	14	28
Homemaker	21	25
Median Household Income		
Male head	$10,000	$18,000
Female head	$3,500	$5,488
Other	$ 0	$3,216
Total	$5,556	$16,800
Own or buying a home	48	77
Highest Grade Completed		
6th or less	11	5
7th to 10th	22	22
11th or 12th	45	38
13th or more	22	34
School Enrollments		
Public	98	79
Catholic	2	12
Other Private	1	10
Perceived Importance that Schools be Integrated		
Very important	28	4
Important	58	31
Undecided	11	24
Unimportant	3	28
Very unimportant	1	13

Source: Johnson and Matre, 1989.

participants reported significant interdependence among their relatives, naming activities such as frequent visiting, sharing transportation, and loaning one another money.

The significant racial disparities reflected in Table 7-1 are representative of the historical legacies of white supremacy where blacks and whites were segregated in the job market and in public education.

The natural gas facilities of south Mobile County had no discernible impact on Theodore's workers and contributed few resources toward education within the county. Located in State waters, the gas fields generated royalties for State coffers, but interest from the trust fund wasdesignated for non-education agencies (Mobile *Press Register* April 20, 1988). Although the shifting economic picture affected residents' occupations, the greatest influence on Theodore was the population change that occurred with the forced integration of the Mobile County schools.

Mobile's first court order was issued in 1963, but only after a series of court orders did any real change occur. In 1967, for example, the U.S. Department of Justice entered the *Birdie Mae Davis* lawsuit as an intervener for the plaintiffs and thereby revived the case. Even with the participation of the Justice Department, little except for faculty desegregation was accomplished that year (Foley, 1981). By 1969, though, all-school districts in Alabama were under court ordered integration, and, in that year, the all white Alabama Education Association merged with the predominantly black Alabama State Teachers Association to become the Alabama Education Association (Eddins, 1997). Still, continued nonconformance to the Court of Appeals' plans eventually led to the Supreme Court, where the case was consolidated with *Swann v. Charlotte-Mecklenberg Board of Education* and *McDaniel v. Barresi*. On April 20, 1971, the Supreme Court ruled that a school system plan could not include the operation of any all-white or all-black schools. The Court remanded the case back to District Court to consider techniques such as the restructuring of attendance zones, bus transportation, and split zoning to achieve integration. Though the opening of the 1971-1972 school year was peaceful and orderly, violence returned to Mobile Schools in 1972. White flight began in earnest in 1970, and, as late as 1997, some argued that Mobile had never achieved the goals of the Supreme Court decision.

While many Mobile city residents who could afford it sent their children to private schools, others fled the city limits. Though housing developments along the Fowl River and elsewhere attracted newcomers of higher socioeconomic status than the majority of Theodore's residents, most professionals who left Mobile moved their families to Baldwin County (see Section 6). These patterns are evident in both racial and economic variables as measured by the U.S. Census. (See Table 1-4 for general characteristics of the area.) Theodore was perceived to be a good location for lower and middle income whites seeking to escape forced integration.

Although Theodore's black population was small, the racial intolerance that was so prevalent in the 1960's continued into the 1970's. Theodore's black students had been segregated in one elementary school, and, when that ended in 1971, many white families in Theodore withdrew their children from the public schools. Yet, the community had only one high school, Theodore High School, and it was not affected by the court ordered redistricting. It remained one of the few community high schools in the Mobile County Public School District. Even in 1998, the extent to which desegregation affected Theodore was remembered.

> Theodore didn't start booming out until desegregation started. With desegregation, a lot of people moved here. [AL-DA-019, school staff member]

Overall, the influx did not significantly alter the socioeconomic makeup of Theodore. The community remained one of working class families, and many individuals commuted to Mobile to work in the paper mills and other industrial plants there. Parallel to the growth in Theodore was the development and expansion of Tillman's Corner, immediately north of Theodore. The first of several efforts to incorporate Tillman's Corner, in an attempt to establish a local government and avoid annexation by the City of Mobile, occurred in 1973 (see Section 6). As late as 1985, Mobile's mayor sought to annex south Mobile County as far down as Theodore Industrial Canal to increase the city's tax base (Mobile *Press Register*, March 21, 1985). Eventually a deal was made between Tillman's Corner Chamber of Commerce and the City of Mobile wherein 2 percent of sales taxes from Tillman's Corner are paid to the city in exchange for infrastructure improvements in the community. Situtated between Theodore and Mobile, and without its own local government, Tillman's Corner has grown in a rapid and uncontrolled fashion.

In general, the introduction of individuals with new ideas and experiences served as a catalyst for change in the Theodore area. For example, beginning in 1972 with the introduction of the first black administrator and accomplished through the dedication of many school personnel, the schools became a central force in reducing racial conflict. As agriculture disappeared, these same personnel recognized the huge disadvantages that students would face without an education that would allow them either to go elsewhere or to take leadership positions in the community. The son of a sharecropper, one school administrator took special interest in student achievement and pride.

> All these little [incorporated communities] were specialized in certain products, such as cotton, corn, soybean... so these types of farming and things kind of overshadowed the importance of getting an education... consequently, we did have a large dropout rate... The economical disadvantage [was not of] just a few blacks that were scattered throughout those communities, St. Elmo, Theodore, etc. I won't say economically deprived, but the economically disadvantaged whites outnumbered the blacks much more than they probably would in other areas. So, having said that, it was kind of difficult to persuade a kid that you needed an education, to focus on going to a 4-year,

> or 2-year institution... Yet, no one wanted to come back and live on the farms. [AL-DA-034, black educator]

Through various programs and approaches, school personnel led Theodore to become one of the top schools in Mobile County. Many of the higher income families continued to send their children to private schools, but some began sending their children to the public school. The school developed a strong academic and honors curriculum, offering advanced placement courses in subjects such as foreign languages, music, and science.

> We offer an advanced curriculum with three foreign languages. We participate in the German-American Partnership Program. German students come for three to four weeks. Our German students go there for four weeks. In French, every other year they travel to France for 9 days. There are some years when the Spanish program travels. We are able to offer the full array of advanced placement courses -- history, biology, chemistry. We have had advanced placement for language. [AL-DA-017, white educator]

In Mobile County, vocational and career education at the high school level were concentrated in three centers outside the regular high schools. Separated in sites away from the high school campuses, career and vocational education remained a minor component of education there. In south Mobile County, agriculture remained the primary focus. The career center located in south Mobile County was named the George G. Bryant Agribusiness Center, and its name reflected its curriculum. Throughout the 1970's, students could study horticulture, forestry, and animal science. In response to the success of area nurseries, the career center expanded its program to include landscaping. Theodore's industries drew their workers from many locations and neither perceived a need to work closely with the career centers nor were under public pressure to be very involved with the local community. Consequently, the schools in and around Theodore did not develop strong industry partnerships during this period. Still, in the 1980's, career center faculty and staff worked to improve their programs and adapt to the new economic realities. By 1986, the career center had expanded to include 11 programs and 300 students. Two of the programs, aviation technology and industrial plant process technology, were a direct response to industry need. At the same time, postsecondary vocational education continued to expand at Southwest College, and enrollment from Theodore residents rose significantly in the 1980's (see Figure 7-11).

Mobile was impacted to some extent by the downturn in oil and gas prices of the 1980's, but the effects were largely due to the resulting general economic slump and seldom were identified as a result of the oil and gas industry. Impacts occurred in industries that responded to oil and gas needs, such as construction, but petroleum was only one of many facets of the regional economy. For example, the construction industry dipped briefly in the late 1970's and then stayed up until 1991, largely because

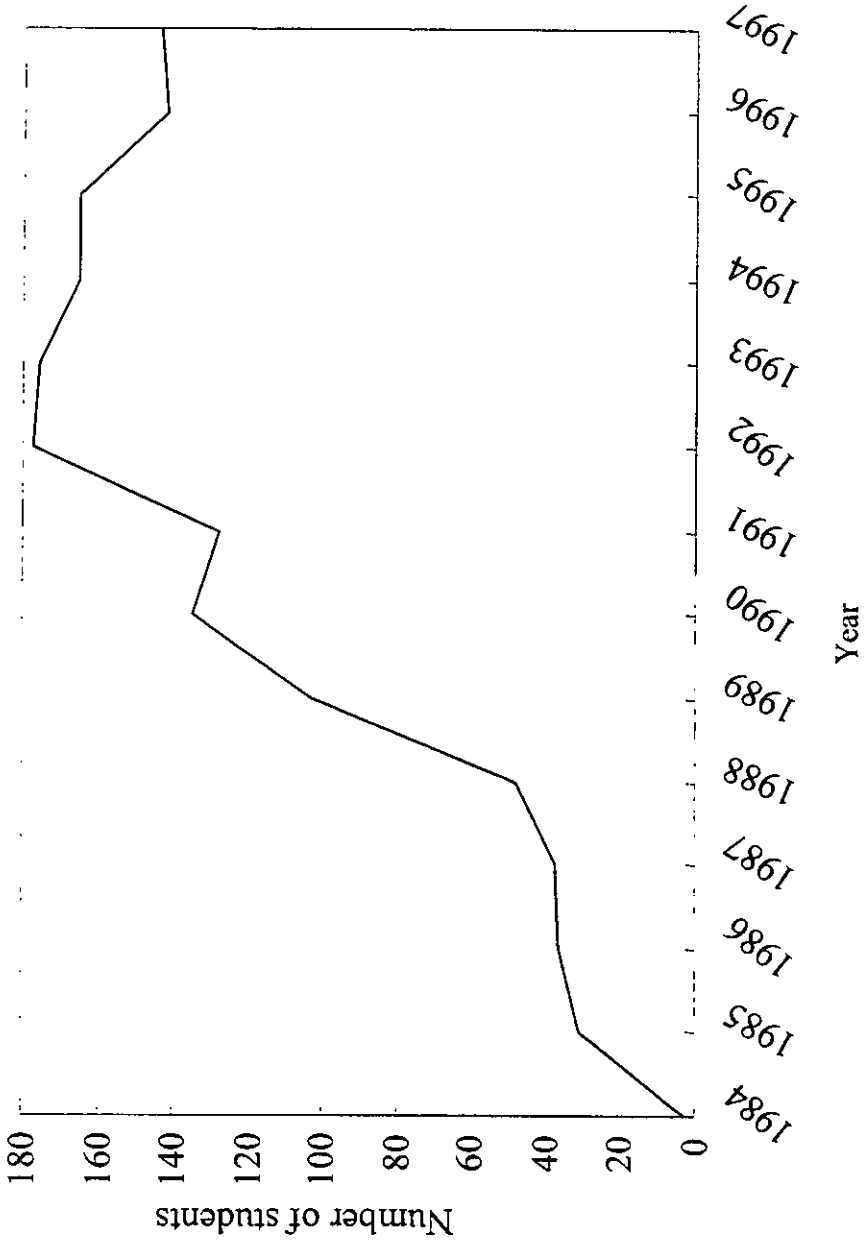


Figure 7-11 Enrollment of Theodore residents at Bishop Community College, 1984 to 1997.

Source: Bishop Community College Registrar, 1998.

of the building boom that began in 1981 after the devastation caused by Hurricane Frederic.

> After Frederic, and till the end of the 1980's, Gulf Shores was a winter community for the northerners and a summer resort. ... There has been a lot of growth and development in Gulf Shores. That took up a lot of the slack from the sluggish commercial and industrial market. [AL-DA-039, white businesswoman]

A few events, such as the bankruptcy and closing of the Marion Oil Company refinery, were directly related to the downturn, but most were more indirectly connected. An individual who moved to Mobile in 1981 from south Louisiana commented on the difference. She had graduated with her master's degree at a time when education was heavily subsidized by oil and gas revenues.

> I'm from south Louisiana. Oil revenues paid for my education... They paid for it...but it was either feast or famine... [In Lafayette], people had no jobs. [My brother] and his wife, and even the oldest families, fled. They went to Atlanta, to south Florida. The changes here were nothing like what my family went through in Louisiana.... What I think is neat about Mobile is that it's not totally dependent on oil. They [in Louisiana] were doling out money to educators hand over fist. We're not nearly where Louisiana was in terms of dependency. [AL-DA-031, white educator]

7.3.3 Challenges to Industrial Development (1990 to 1998)

During the 1990's, industrial development in Mobile County continued, but challenges to that development increased (see Section 6). The concurrent industrial expansion along the Theodore Industrial Canal, the Salco Industrial Site established on Alabama Power Company's property north of Mobile, and the Bayou Jonas Industrial Park surrounding Mobil's Mary Ann Gas Plant caught the attention of residents in these three locations. Media coverage of IDB practices by the Mobile *Press Register* provided these residents with a common frame of reference from which to examine the industrial growth. However, even by 1998, only a few observers recognized the connection among the three sites; at each place residents in the immediate vicinity of the parks raised concerns about the nearby park while remaining largely ignorant of what was happening elsewhere.

As the oil and gas industry turned upward, petrochemical plants and refineries also geared up. Alabama's natural gas industry really took off during this period, as indicated by the construction and expansion of the gas plants located south of Theodore (Wade, 1999). Three companies, Mobil, Exxon, and Shell, operated plants that process gas from offshore, but little attention was paid to these facilities until 1997. Public concern over the plants led Mobil to the develop a Citizen's Advisory Committee and increase its public relations efforts.

In contrast to the limited scope of citizen concern expressed in the south, the Theodore Industrial Canal became the focus of a more protracted conflict. A new wave of citizens, generally of higher socioeconomic status, had moved out of Mobile into new housing developments within the rural landscapes along the Fowl River southeast of Theodore. The initial efforts to revitalize the Theodore Industrial Park, such as Alexander-Allen's 1994 attempt to reopen the former Marion Oil Company refinery, generally went unnoticed. However, by 1997, the upsurge in industrial activity in Theodore attracted these residents' attention.

When in 1997 two chemical companies located along the canal merged, and another subsidiary of their German parent company applied for a permit, concerned citizens from Mobile and the surrounding areas organized to block the plant and raise public awareness of the severity of the area's pollution problems (see Section 6). Though the articulation of environmental concerns appears similar to the rise of environmental consciousness along the Gulf Coast, particularly among recent, more affluent arrivals, the Mobile Bay group reflects the general conservatism of Mobile elites, seeking to reduce levels of pollution without disrupting the area's economic and political structure.

Still, at least some individuals began to criticize local and State policies offering financial incentives to industries willing to locate in Alabama. The most famous of these, known as the Mercedes bill, was originally passed to lure Mercedes Benz, the German auto maker, to Alabama with $250 million in incentives and the use of employees' income tax deduction as credits to pay off company construction debt. The use of such incentives was seen to be at the heart of current problems related to occupation and education. The deal was made at a time when Alabama ranked 46th nationally in spending for schools (Gupta, 1998). Even though the Mercedes bill was eventually retracted, later legislation continued to attempt to attract industry through financial incentives.

After decades in which businesses and industries financed by industrial development bonds were exempted from paying property taxes, in 1990 the Mobile IDB began requiring businesses financed by its bonds to pay a "sum-in-lieu" of property tax to the school system. At that time, the Mobile County Public School System faced a funding crisis that threatened the schools. The schools had not had an increase in funding since 1959. Some school officials had begun criticizing the IDB and other Mobile leaders for their lack of ownership and sense of responsibility for the schools, pointing out that the civic leaders' children were educated in private schools (*Harbinger,* March 24 - April 7, 1997). Although most sums-in-lieu payments were made to the county commissioner and collecting them was never fully successful, it was the first effort in the county to link industrial development and school funding.

A 1992 measure to increase school revenue through property tax was derailed politically. Local sentiments against property tax have prevailed, and financial and racial tensions have remained intertwined.

> My sons went to public schools for 2 years and to private schools the rest of the time, through high school... They get plenty of money to run the schools with. We worked hard and paid for our kids' education. Now I get a little property, and they want to put another 1.5 mil on it. They want to double the assessment. And there are people living free in the government projects... [AL-DA-037, longtime business owner]

Still, in 1992, the Alabama Legislature passed a law that removed school tax from the exemptions that the IDB could grant to attract business and industry to Alabama or expand existing facilities. Nevertheless, in 1993 industries in Mobile County were exempt from more than $10 million a year in taxes, $4 million of which would have supported the local school system (Patterson, 1999). In 1995, several school construction bonds were issued, and new schools were built in Mobile County. Still, in 1998, the Mobile County Public School System was the 34th largest district in the United States and one of the most poorly funded. The conflict between selling the State or community for economic development and the development of an educated workforce is only beginning to receive much attention.

The efforts of Theodore educators to improve local schools were only partially successful in aiding the transition from an agricultural economy because many students opt to stay in the community, and local opportunities for high school graduates remain limited. The decline in agriculture and local attitudes against farm work have deterred young residents from pursuing farming as an occupation, but agriculture has remained an important part of the economy. Cotton made a comeback in the 1970's, and its influence on the local economy was notable in the late 1990's. Migrant workers and prison work crews have been utilized as labor on pipeline and road projects, as well as in the agricultural fields. Many of the migrant workers cite south Texas as their home. Small farmers have continued to work second jobs in places like the paper mills and shipyards to supplement their incomes.

As Mobile County's economy improved in the 1990's, and as OCS activity picked up, many sectors were seeking laborers. Few, however, aspired to such occupations. When comparing the present to the past, both educators and employers argued that a major problem with the young generation of workers has been that they have not had to work for what they have gotten. Like in the other study area communities, employers cited drug use and a general decline in worker quality and noted that young people are reluctant to take jobs that require them to work outside or in physically demanding situations.

> I'm finding some of my kids, when they reach a level of frustration, they just stop. They say, "It was too hard." "I did not want to think." I find I wonder where that came from. We have kids that do that on a daily basis. Ten years ago we didn't have that.... Ten years ago there was not as much hostility... [AL-DA-013, white educator]

In contrast, several local residents commented that the jobs available are neither desirable nor secure. The few stable jobs available at the chemical plants are often obtained only after an individual has worked elsewhere for many years.

> We like that better. We get to see what kind of workers they are... When they first get out, they hope for more opportunity than this, but then they end up here... This is not a firm plan or goal in the minds of the students. [AL-DA-033, chemical industry representative]

As in earlier periods, working offshore remains a lucrative source of income available to a few residents.

> My son does seismograph work. He goes all over the world. He's in the gulf right now. He works for a Norwegian company, and he worked in Africa for 2 years. He works 6 months out of a year -- 75 on and 75 off... I don't know of anybody else (from here). [...]'s son did it 15 years ago with my son. There are lots of guys from South Dakota who work with him, and a few from Missouri. [AL-DA-037, white businessman]

The high wages offered in OCS-related onshore work have attracted other workers. The region's construction industry saw a significant upswing beginning at the end of 1994 due to expansion in the petrochemical and offshore related industries, and construction companies faced shortages of craftsmen. One response to industry needs was an increase in efforts at crossover training where one individual would learn both pipefitting and welding and another would learn both plumbing and pipefitting. The diversification was perceived to be valuable for meeting industry demands because one individual could do multiple jobs and thus decrease the need for companies to hire and layoff personnel when specific tasks were needed. However, data on worker shortages and job availability were not available to this study.

During the 1990's, Mobile County began to reverse the decade long trend of flight into Baldwin County. A housing construction boom in Mobile County led one observer to note that Mobile was "riding on the coat-tails of the development boom in Baldwin County" (*Harbinger*, May 13 - May 26, 1997). Theodore's population has continued to grow as more housing developments have been completed. Many young people have stayed in the community after high school, and newcomers have joined them. The recent additions have not noticeably altered Theodore, and it has remained in "pretty good middle to lower middle economic condition" [AL-DA-007, white educator]. As new residents began to send their children to public schools, especially the traditionally all-black elementary school, the racial barriers have in some ways been reduced. Extracurricular activities, however, such as the community Little League baseball program, have remained segregated.

> At that point, we started getting more white students. It is just to this point where middle class whites are willing to come back. People of all races are now willing to accept our school. Now they come out and look at us. Before, [when they found out that it was the formerly black school], they said they were not coming. [AL-DA-013, white educator]

The failure of local industries to find the workers they needed combined with increased public scrutiny of industrial development in Mobile County led to greater demands for industry involvement in the schools. In Theodore, this industry involvement generally has been characterized more by the types of activities that were common under the "adopt-a-school" movements of the 1980's (see Box 7.2 at the end of Section 7.1).

> We have been a Partner in Education [for many] years. It started as the adopt-a-school program. We retain one school as a formal partner, but entertain requests from all schools. We have supported the elementary schools through grants. Besides using what we have to [attract a workforce], it's also good PR to support education. That is not the fundamental reason we do it... We see [our reading program] as an opportunity to share our employees and business with young people in the community so they can grow up with a positive attitude of [our company]. It's a low key approach, the way it should be. [AL-DA-033, chemical industry representative]

Though some residents argued that Theodore's schools have declined in quality in recent years, they are still among the better schools in Mobile County. When discussing issues they face, educators, parents, and community leaders identified the same problems noted in other places: drug use, single parent families, student and parent apathy.

> Mobile is one of the worst counties there are for crime. Yeah, crimes are really bad here.... You see, there's a lot of drugs going around in the Theodore area. This is a bad place for drugs. It really is, a bad place for drugs. [AL-DA-040, convenience store clerk]

> We have very few fathers. We have a lot of grandparents... It's a long term problem... I feel that we may not have as much parental support as we used to, or now things are really polarized. Some really support discipline. Others, their kids are always [having problems]. [AL-DA-013, white educator]

> It's probably not a great desire of [the students] to get out [of Theodore]. They're not unhappy with their life... There are not a great deal of them who want to leave... I would say the greatest change in the educational environment stems from the attitude in all society, from the home, the apathy that exists among parents...[AL-DA-017, white educator]

Local efforts have been made to address these problems. For example, elementary schools in Theodore recently have begun a pre-kindergarten program even though the Mobile County Public School District still does not even require kindergarten. School employees described a "blue collar" student body with few high achieving students. Nevertheless, the high school has continued to offer an advanced curriculum and has developed special programs to recognize high academic achievement. For example, the school began issuing academic letters, similar to those given for participation in sports, to successful students.

Like elsewhere, Alabama educational policies have pulled educators in several directions. Recent State policies have raised academic requirements for high school graduation and emphasized a college preparatory curriculum. In 1984, the counseling department began tracking the high school programs and future plans of Theodore High School seniors, using a self-administered survey. The school offered three tracks, vocational, regular, and college preparatory, and, until 1996, student enrollment in the vocational track was dropping (see Figure 7-12). Beginning in the middle to late 1980's, most students began saying they planned to go to college (see Figure 7-13), but even by 1998, according to the counselors, only about 30 percent have continued their education. Like the other States in this study, Alabama has recently toughened its graduation requirements. The new requirements have been put into effect overnight, and some educators expressed concern about whether or not the teachers and students could be ready for them. Some expressed fear that the policies will increase the number of students at risk for dropping out and create a need for more alternative schools.

> I am convinced the standards needed to be higher, but there has been no preparation. I see a train wreck ready to happen... We're going to have to learn to teach and be willing to teach applied courses, like applied algebra. [AL-DA-039, white businesswoman]

Mobile County also has made attempts at following Federal policies focused on career and technical education. Between 1990 and 1992, some Mobile County educators became involved with Tech Prep, (see Box 7.2 at the end of Section 7.2), but, according to one observer, "it fizzled on the vine" [AL-DA-039, white businesswoman]. Community partnerships did not develop as needed for that program. A renewed emphasis on industry and education partnerships came with the School-to-Work Opportunities Act of 1994, but school personnel argued that top school administrators have not fully supported that initiative. Industry response to the program also has been mixed. The reasons participants gave for embracing school-to-work in Mobile County are similar to those heard elsewhere. For example, industry representatives argued that they were unable to find motivated, capable learners and educators expressed frustration in trying to reach unmotivated students and to sell technical and career education to parents.

> Teachers lose touch with business and industry. They begin to turn out a product that is not employable. So, business and industry said, "Here are the

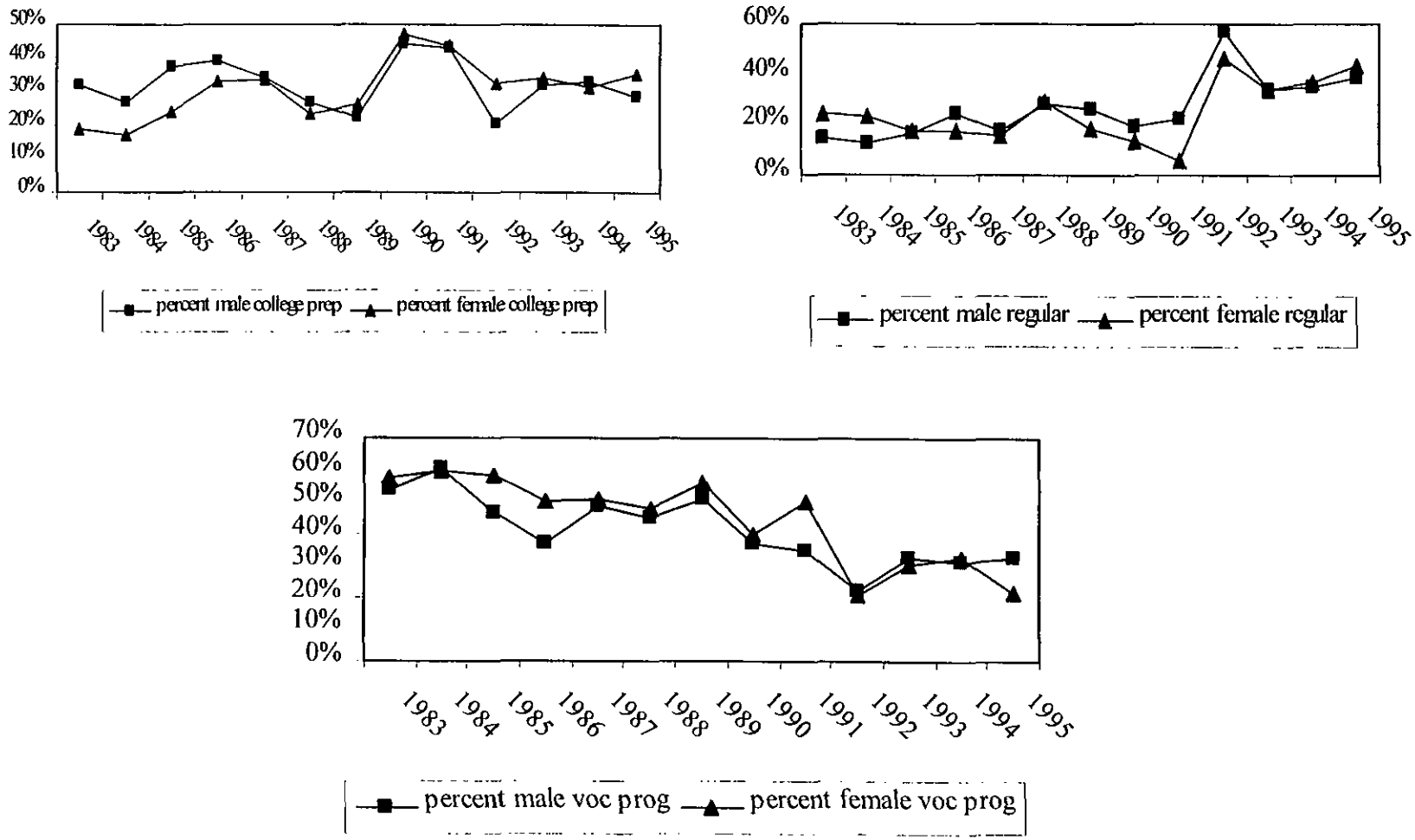


Figure 7-12. Educational paths of Theodore High School students.

Source: Mobile County Public Schools, Students Support Services and Counseling Department, 1998.

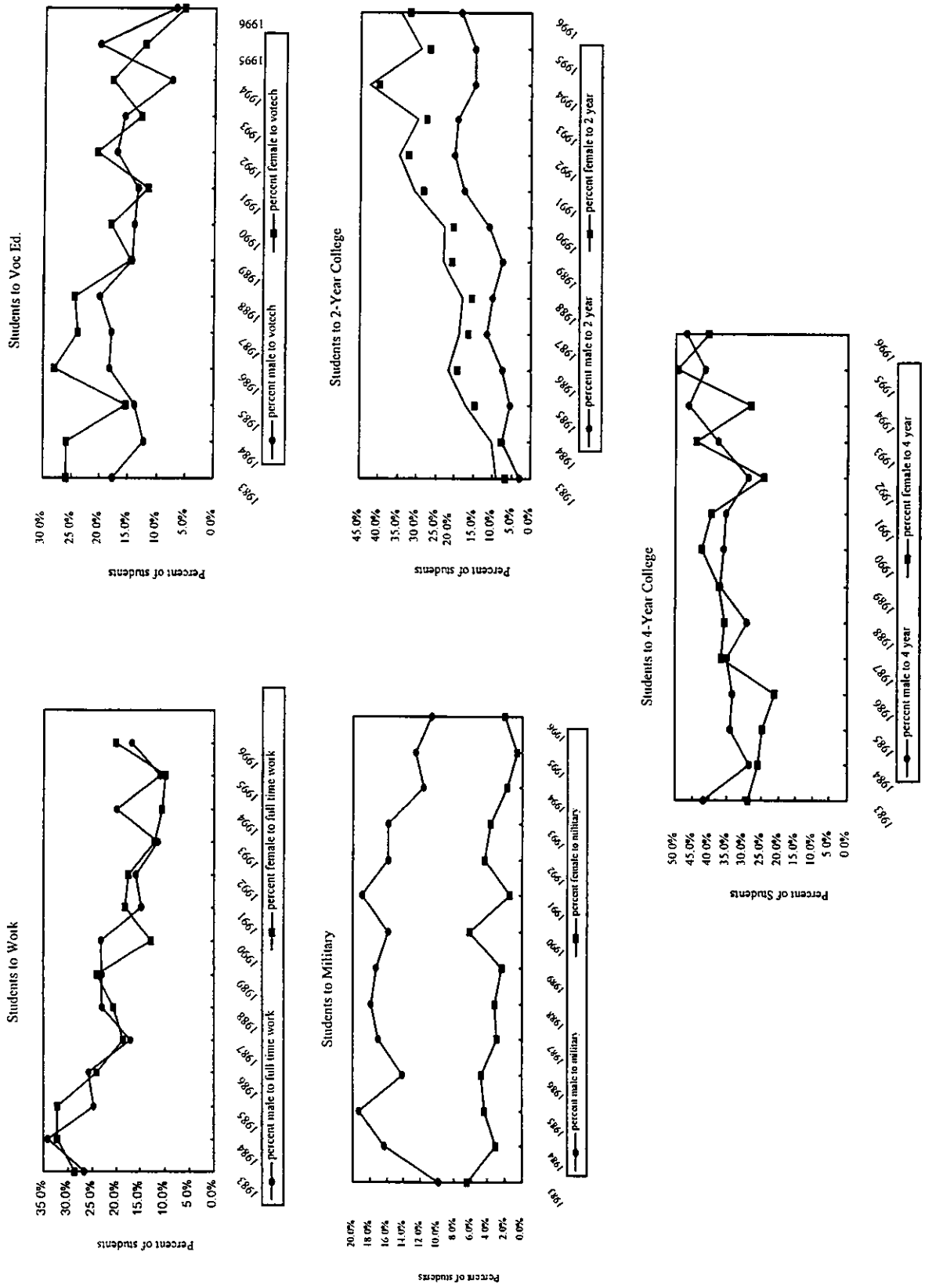


Figure 7-13. Future plans of Theodore High School students.
Source: Mobile County Public Schools, Students Support Services and Counseling Department, 1998.

> skills we need." The business community has got to be willing to intern teachers, guidance counselors, and educators and show them what's going on in our world today. The teachers need to see the equipment they are using, how people perform their jobs, how employees have to interact with one another. They need to see first hand the skills that are needed. [AL-DA-039, white businesswoman]

As part of the school-to-work program, nineth and tenth grade students in Mobile County schools must put together their career plans, but commitment to other aspects of the program varies widely. In Theodore, application of the school-to-work philosophy and practice generally has been limited to career education. In this period, the career center was renamed the Bryant Technical Center and grew, expanding to 14 programs and 430 students by 1998. The instructors responsible for each program identified business and industry contacts and worked with industry partners to modernize the curriculum and find placements for technical center students. For example, the paper mills and chemical plants assisted in developing the curriculum for the industrial plant process technology program. Likewise, as a result of the changes in job opportunities and student interests, the school began phasing out its animal husbandry program. Unfortunately, despite the efforts of the technical center, in a district where financial problems have prevailed, teachers' salaries at the career and technical centers have remained so low that it has been difficult to attract teachers.

A major tenet of the school-to-work philosophy is to increase the academic achievement of non-college bound students and attract bright, motivated students to technical education. In 1998, though, Bryant still was trying to change its image from that of a vocational center for students with difficulty completing a regular academic curriculum. The center works to attract new students. In 1997, Alabama's first "Outstanding Nontraditional Vocational Student of the Year" was a female graduate of Bryant.

> We have a shortage of craft workers. We have to have new young blood. The older people are retiring. School-to-Work is also applying high academic standards. Some crafts do not require an analytical mind, but a lot do. You get into industrial crafts, when they complete 4 years, they know physics, geometry, and calculus. [AL-DA-039, white businesswoman]

Despite its as yet limited application in Theodore, the impact of the School-to-Work Opportunities Act is likely to grow. For example, education is one of the six focus areas of Envision Mobile-Baldwin, a citizen driven strategic plan developed in 1997 for these two counties. The Mobile Chamber of Commerce is a key player on the education committee, and one of the plan's main goals is to bring business, industry, and education together. In some industry sectors in Mobile County, the Act has been used to get funds for programs that were already being developed. The construction industry, like others in great need of workers, had already begun to develop initiatives targeted at improving public education when the new law passed. For example, in Mobile County in the 1990's, at a time when unions had lost

influence and no longer served in an educational capacity for the industry, Associated Builders and Contractors, Associated General Contractors, the Homebuilders Association, and the Business Roundtable joined together to form the South Alabama Education Trust, a nonprofit organization dedicated to training craftspeople. When the School-to-Work Opportunities Act was passed, it provided a potential source of funding for the Trust's programs. In a school-to-work grant submitted by that organization, contractors, suppliers, and trade associations joined in partnership with Bryant Technical Campus to develop what has become one of the trade organizations' best programs nationwide. A similar initiative has been developing along the Alabama coast for the shipbuilding industry.

Following other trends in the United States, the Bryant Technical Center began articulating with Bishop State so students could transfer credits and get a jump on post-secondary degrees. Its construction trades program was developed in modular units so students could continue after high school without repeating what they had already learned. Another new approach is the development of a program for aircraft mechanics after Mobile's successful efforts to attract the aircraft industry led to increased demand for workers. Students who have completed the aircraft mechanics program can enter the Alabama Aviation Technical College.

The technical center has had limited involvement in adult education, although during the 1993 Exxon Bay Project, which involved upgrading and refurbishing Exxon's gas plant, the center provided the space and trained Exxon employees when Exxon ran short of welders and welder fitters. The program was a cooperative effort between Exxon, Bryant Technical Center, the Alabama Industrial Development Training (AIDT), and Associated Builders and Contractors. AIDT is an institute of Alabama's Department of Postsecondary Education and was established by the Alabama State legislature in June 1971 to "build a healthy State economy by recruiting and training a skilled workforce to attract new industries to the State and to expand existing industries... In addition to training, AIDT offers services including trainee recruitment and screening... AIDT's Mobile Center supports aerospace and chemical industries as well as other area manufacturers" (http://www.adt.edu/AIDT.html).

Copying a pattern begun elsewhere in Alabama, under the direction of the AIDT, Bishop State signed an agreement with IPSCO steel, a new tenant of the Salco Industrial Site north of Mobile, to develop curriculum for the steel industry through a manufacturing technology program. The industry provides no financial support for the program, but will offer personnel to assist with instruction and allow students to go on site. The general failure of past policies designed to attract industry at the expense of public education has been recognized by some, but efforts to increase tax burdens on county residents and small businesses while continuing to offer huge tax abatements to large industries continue. The agreement to provide training for industrial workers, tailored to the needs of particular industries but at public expense, is another form of abatement. Public officials acknowledge the dismal State of Alabama's education system and their refusal to send their children to public schools at the same time they justify continued tax abatements for industry. Proponents of the new industry-education

partnerships argue that the dismal state of education has led to the need for greater industrial involvement, but few have acknowledged the trade-off between training for industrial jobs and general education.

Theodore and south Mobile County move toward the twenty-first century under several new educational initiatives. Some educators and industry representatives view these programs as forces for change. Cynics argue that these, like many before them, will soon pass out of favor and have no major impact. As Federal monies already have been reduced, it appears both groups are correct. In industries where the ideas and motivation for school-to-work programs originated apart from the Act and will be carried by industry partners, the Act stimulated new ways of doing business. Elsewhere, school-to-work staff and programs will have come and gone before significant changes could occur. Although the gas plants of southern Mobile County have plans to expand, it is unlikely that they will have any greater involvement in either the local economy or the educational system than they have had. Likewise, other OCS-related industries, such as the shipyards of southern Mississippi, can be expected to continue to employ Theodore residents, but their influence in Theodore is unlikely to grow.

The following section highlights some similarities and differences between Theodore and another former farming community, Schriever, La.

7.3.4 Comparison to North Terrebonne Parish, Louisiana

As described in Section 6.2.1, Schriever, La. also was an agricultural community at the end of World War II. Unlike in Theodore, the major agricultural product grown in the area has not changed. Since the nineteenth century, sugarcane has been the leading crop. Also, in contrast to the limited impact of OCS activities on Mobile County, Terrebonne Parish's economy has been dominated by the offshore oil and gas industry since the 1950's (see Section 3). When asked about changes in the community, one local resident commented, "There's been no change. Basically it's either oil field related or sugarcane." [LA-DA-048, secretary in Schriever] What did change, though, was mechanization and the shift to larger farms and reduction in labor needed to operate those farms. By 1998, instead of numerous family operations, the majority of the sugarcane farming was under the control of three entities. A local resident tells the story:

> My father was in sugarcane. The smaller farmer can't keep up with the modern equipment that is necessary to stay in the industry. My brother had taken over when my father retired, but the bigger land owners push the smaller guy out. With ecology and the different way of harvesting sugarcane, it is making it harder. They're probably going to be stopping burning. Then the farmers will have to get combines. My brother gave it up. It was probably going to cost him more than he could make. The bigger land owners are local people. It's mainly, all your land owners own little tracts and they rent from other people who have the land. One guy may take over property from

> someone else. That cuts out the little guy. When the yield is better, you see the guy gets a return based on the yield (the tonnage from this particular property). The guys will lease to the ones who can get the best yield and therefore that's the bigger ones.... In some cases, [the new subdivisions may be replacing sugarcane farms]. I have been noticing across the bayou from here, where my parents own property, as the older people have died, the younger people are selling it. They are building homes on it and it's not in sugarcane.... My brother went into service companies for oil field related work. He was doing that before he took over when my dad retired. I guess he felt responsible to take over dad's business. He went back to that afterward. [LA-DA-048, longtime resident]

Living between Morgan City, Thibodaux, and Houma (see Figure 1-3), as the region's economy shifted from agriculture to industry, the majority of Schriever's working residents began to commute elsewhere, frequently to do OCS-related work. In the decades between 1970 and 1990, the number of people who reported working in the same county as they lived dropped precipitously from 5,204 in 1970 to 3,359 in 1980, to 933 in 1990 (U.S. DOC, BOC 1970, 1980, 1990). The proximity of Schriever to Thibodaux in Lafourche Parish, Morgan City in St. Mary Parish, and Houma in Terrebonne Parish has made it difficult to obtain data about residents' work patterns. Also, like in Theodore, individuals who could not make that transition became part of the growing population requiring public assistance. Sugarcane and oil, both the desire to be in and out of them, dominated local residents' descriptions of their community:

> What used to be Southdown used to be sugarcane. It doesn't even have sugarcane any more... it went from sugarcane to cattle. The switch over came because they sold out to another company.... On [Highway] 311, it was sugarcane but now it is oil field businesses. [LA-DA-048, longtime resident]

> I think in the parish it's real interesting to see the growth of the parish related to oil. The parish is nothing but an oil-related parish. When oil died, it got better. More things were coming in. Now, the oil stuff picks back up again. When it went down, it went down bad. People left their houses and went back where they came from. They left their houses. You could drive around the parish and see huge, gigantic houses, slums, huge gigantic houses, and slums.... Between the two parishes [Terrebonne and Lafourche], we drop and gain [students] all the time. We are so close to Thibodaux. They move over there, or go stay with grandparents, and come back. [LA-DA-047, white educator]

> When my children were young, I stayed home. Then I came to work here. Because the oil field was a lot better at that time. My husband worked in oil field-related work.... [Around here there are] mostly little independent oil

> workers.... The only people that live here that work here are in sugarcane. Everything else you either have to go to Thibodaux or Houma. [LA-DA-048, longtime resident]

Certainly, for the purposes of this study, the major difference between Schriever and Theodore is that Terrebonne Parish has been impacted by the fluctuations in OCS activity to a greater extent than Mobile County. In that regard, Terrebonne's history is similar to that of south Lafourche with fabrication yards rather than shipyards and boat companies as the largest employers. As Schriever's sugarcane economy responded to shifting agricultural trends and residents took up industrial occupations, locals were most likely to find work as welders and fitters. Although many worked offshore, the abundance of nearby onshore support jobs meant that Schriever residents were less likely than people of south Lafourche Parish to work on rigs or boats.

As occurred with the shipbuilding and boat industries, the downturn of the 1980's led to a major reorganization in the fabrication industry and consolidation to fewer, larger companies. Schriever residents have the benefit of some diversification, such as an agricultural equipment manufacturer in Thibodaux, but their economy is more closely linked to OCS activity than Theodore's. Schriever educators, like those in Theodore, have recognized that the loss of agricultural jobs and the technological advances in industry require greater emphasis on formal schooling. Terrebonne Parish is in the same School-to-Work region as Lafourche Parish, so the programs developed there were created by the committees described in Section 7.2. Educators described how the oil field continues to play a role in educational and occupational decisions. Messages about competition and the emphasis on education for all because it meets the needs of industry permeate discussions.

> With the new production explosion that has come about, the needs of the oil field have changed. It is more technological. You cannot just have a strong back and a weak mind. We are now trying to help kids see they need more than a high school education. [LA-DA-032, black educator]

> In this parish, our major goal is to raise the achievement level of all our students to enable them to compete in a world economy... Industry is the only one that is really looking at us and saying we need a product that can communicate, analyze, and produce. The parents know we won't make national standards... The parents and the teachers have low expectations. Industry is changing. A few years ago, a crane operator had three people operating the crane. Now, one person needs to know how to run it, fix it, and take care of it... We need to bridge the gap between college bound and non-college bound students whether they go to college or not. [LA-DA-032, black educator]

With a larger black population than south Lafourche Parish or south Mobile County, north Terrebonne Parish experienced more racial strife during desegregation, and some of the problems linger today. While some residents selected private and Catholic schools for their educational achievements, others sent their children there to escape integration. Though at the Catholic schools academics are emphasized over technical programs, the perceived need for students to compete globally still forms the basis for curriculum decisions. The differences between the public and parochial school student outcomes are significant.

> Most of our kids go on to a 4-year college. Ninety to 92 percent of our kids go to a college or university (mostly LSU and Nicholls). About 4 percent go to a trade school or vo tech. The others go to a mix of work and the military.... We are not driven by the industries in this area. We are driven more by our need to get our kids ready to compete anywhere. We are hoping to internet with the university. Now we can search their library catalog from our computer.... Our students' parents are mainly professionals. [LA-DA-055, parochial school educator]

During the bust, Catholic school enrollments dropped because many people did not have the money to afford Catholic school and others moved away.

> I felt personally the impact of [the bust] here at our school. From '86 to '87, we went from 700 to 580 students. We lost about 130 kids. Some parents were moving away and others were not able to pay tuition. It was the first time in the history of our school that we laid off teachers. We laid off three total. In hard times, private education is something people cut back on. We're a bedroom community. We service the oil fields, the chemical plants along the river, and McDermott, etc. When oil took a downturn, there was a tremendous amount of anxiety among our teachers and students. [LA-DA-055, parochial school educator]

Public schools reabsorbed students but faced problems of their own. In 1989, the Terrebonne Parish School Board laid off teachers, resulting in a strike that lasted many months and created tension within the communities.

During this study, educators, industry representatives, and residents described the same problems encountered in other communities that were part of this study: student apathy, rapid social change, and drug and alcohol abuse.

> I think [in the past, many students] recognized the need to go to school but they could not. Now, the opportunities are there and they are not taking advantage of them. We had 588 dropouts last year. It appears a number of youngsters expect life to be handed to them on a silver platter and work is not part of their vocabulary... some feel school is just an entertainment

> institution... The average age in the adult program is decreasing. That's the wrong thing to happen. That tells me those youngsters are still quitting. A lot of youngsters are coming back because they are up for a job promotion and they've reached a dead end. [LA-DA-032, black educator]

> There has definitely been an increase in drug and alcohol children and kids who live with their grandparents because they can't live with their parents. Mostly because of drugs or because their parents are no good.... I guess you just see the disintegration of the family. There are no families anymore. I should talk, I'm divorced... We have lots of single parent families and the kids say, "I don't know where daddy is." [LA-DA-047, white educator]

The sequence of economic transition (in this case from agriculture to industry) and community dislocation is typical from the perspective of twentieth-century southern history. Changing economic activities result in changing jobs and job qualifications that many locals can no longer meet. The school system often does not or cannot change to respond to the new economic realities.

Both Theodore and Schriever have been affected by OCS activity, but their removal from the heart of that activity is clear. Instead of being the home to the shipyards, fabricators, and other OCS-related industries, they have become bedroom communities from which residents generally must commute elsewhere to work. Throughout the United States, urban problems have led people to flee cities and seek refuge in rural settings, and Theodore and Schriever have been the targets of such actions. Still, most of their new arrivals, like the residents already living there, have been blue collar workers, and OCS-related work has been a significant factor in the continuing existence of these communities. Without a specific economic activity within the communities, educators have maintained a general curriculum, enriching it where possible. In technical education, Schriever's location within Terrebonne Parish has meant that its students are exposed to the more specific OCS industry-driven initiatives organized and implemented, whereas Theodore's students have experienced the agricultural and aviation focus of Mobile County programs.

The next section takes a step farther away from OCS-related activity to examine communities with no industrial activity.

7.4 Communities with No Industrial Activity

In some communities along the gulf, there are still no industrial facilities. Some of these remain dominated by agriculture. Others rely primarily on tourism. In recent years, prisons have become recognized as some of the most promising economic opportunities for these rural communities (e.g., Corpus Christi *Caller Times*, January 26, 1992; Corpus Christi *Caller Times*, January 27, 1993; Corpus Christi *Caller Times*, June 19, 1992). This final

section examines work and education in communities of this type in an effort to further distinguish OCS impacts from others.

Trends in agriculture can be traced to farm policies, market conditions, climate patterns (e.g., cooling in Baldwin County since the turn of century), and the availability of labor. As other sectors of the economy experience labor shortages, agriculture is impacted. Mathis, Tex. is an example of an agricultural community with no industrial activity (see Figure 1-5 for a map), whose history since World War II has been significantly influenced by labor issues. Located in the western part of San Patricio County, an hour and a world away from Ingleside and Aransas Pass, Mathis illustrates a completely different pattern of development. As in agricultural communities throughout the South, labor in Mathis is intertwined with issues of race and ethnicity. Unlike Theodore, Schriever, and many east Texas communities, however, the Coastal Bend counties did not have a legacy of slavery out of which emerged the present economic situation. Due to its proximity to Mexico, unskilled farm labor for the Coastal Bend was recruited from across the border.

Unlike the communities described in Section 7.3, that experienced a transition from agriculture to industry, Mathis has remained an agricultural community. However, despite a successful shift from large-to-small scale ranching and farming in the 1960's in response to economic pressure, Mathis was unable to make another shift when competition from south Texas forced many locals out of business. Texas came to rely on low-wage Mexican workers earlier than most places in the United States, and its relationship with Mexico and her people fluctuated between friendship and enmity from the State's earliest origins. This section demonstrates how its labor and educational policies continue to be affected by that early ambivalence.

This section is organized into three time periods to reflect agricultural patterns in the area: (1) labor-intensive agriculture (pre-1964); (2) the decline of migrant labor (1964 to 1980); and (3) commuting and public assistance (1981 to 1998). The section ends with a discussion of the community of Gulf Shores in south Baldwin County, a tourist community with many of the labor and educational issues faced by Mathis. In both communities, prisons have come to play a role in recent years, as work sites for residents and as sources of workers. In neither community do local demographic trends match county patterns. In San Patricio County, for example, the population trends reflect the activities of the eastern part of the county. In Baldwin County, the population of the southern communities differs significantly from that of the northern part of the county.

7.4.1 Labor Intensive Agriculture (Pre-1964)

Mathis, Tex. has been an agrarian society since it was founded in 1887 as a stop along the San Antonio and Aransas Pass Railway (see Section 6.2; Guthrie, 1986). The earliest local ventures in cattle raising were ended by an extended drought. In the first half of the twentieth century, Mathis' agriculture centered around growing vegetables, which were labor- but not

land-intensive, and row crops such as cotton, which required large quantities of both labor and land. In 1934 and 1935, the Civilian Conservation Corps developed Lake Corpus Christi State Park 4 miles southwest of Mathis, but the reservoir has had problems since its inception and Mathis has never developed into a tourist community.

By World War II, several events occurred that led to significant impacts on both labor and education in Mathis. Beginning in the 1920's, the development of commercialized agriculture and labor shortages in south Texas had resulted in the use of Mexican laborers there. Nearby Corpus Christi, where Anglo-Americans had acquired nearly all the Spanish land grants and segregated themselves from the resident Mexican-Americans and the Mexicans brought in as laborers, had become the site of hostilities (see Section 6). Consequently, in 1929, leaders from all over south Texas seeking to combat growing segregation and introduce reform met in Corpus Christi to found the League of United Latin American Citizens (LULAC). Among its activities, LULAC began filing lawsuits against school districts accused of practicing segregation.

It was not until the World War II, though, when the demand for vegetables and cotton from Mathis increased dramatically and local men left to serve in the war, that labor shortages in and around Mathis became critical. Shortly after the Bracero Accord was signed in 1942, Mathis became involved in the Bracero program (see Section 6.2). The number of seasonal Hispanic residents in Mathis grew exponentially until the Hispanic residents outnumbered the Anglos, and this growth affected the entire community. Then, in addition to the workers governed under the Bracero program, a constant influx of undocumented workers arrived from Mexico to fill the low-wage agricultural jobs (Samora and Simon, 1993).

Although Texans used resident Mexican-Americans and brought in Mexicans to meet their needs for agricultural laborers, they viewed both as temporary foreign laborers and were adamant that they be isolated from the Anglo communities (Carroll, 1990; San Miguel and Valencia, 1998). Thus, they initially were unwilling to hire Mexican-Americans in other occupations. For example, during World War II, Houston shipyards and pipeline companies "routinely excluded Mexican-Americans from employment" (Pycior, 1997). These early exclusionary trends were little different from tactics employed elsewhere in the South against African-Americans. Hispanic schools and neighborhoods resembled black institutions and neighborhoods.

The influx of Mexican agricultural laborers who had little or no bargaining power and worked for minimal wages helped Mathis growers create a cash surplus. A few large growers controlled the local economy. The town's packing houses enjoyed an infrastructural advantage over other parts of San Patricio County (Guthrie, 1986). However, when the war ended, soldiers returning home had to compete with a large supply of unskilled, but inexpensive labor. Options for the soldiers included higher education through the GI Bill (see Section 7.2.6) and migration to urban centers.

Though oil was discovered throughout east Texas, and the nearby city of Alice became a locus of oil-related activity, Mathis saw little change. Away from the onshore oil and gas drilling and support, outside the chain of petrochemical plants at Corpus Christi, and too far from the coast to be part of the offshore activity, it was not forced into the post-World War II petroleum era as were communities like south Lafourche Parish. Lacking a waterfront and a tradition of maritime experience and with land locked up by a few families, what Mathis had to offer was cheap labor. However, as shown in this section, the tradition of migrant labor and the early fears of letting Mexicans and Mexican-Americans move into non-agricultural sectors, especially in the postwar labor surplus, precluded a transition of the labor force from agriculture to the petroleum industry.

At the same time Anglo residents of the agricultural communities in the Coastal Bend were attempting to restore prewar social and economic patterns, Hispanic leaders returning from the war had gained experience and confidence and were motivated to work for change. Mexican American GIs found support from their fellow veterans. One veteran doctor, Dr. Hector P. Garcia, began conducting investigations for LULAC and mobilized Hispanic veterans through an organization he established, the American GI Forum. By 1948, the GI Forum had chapters throughout south Texas.

Despite the tremendous growth in the population in the 1940's, due to the popular belief that the Hispanic residents needed only minimal services, such as housing, schools, and sewers, infrastructure development had not accompanied growth in Mathis and other nearby agrarian communities. Mathis and San Patricio County had among the highest infant mortality rates in the state at the time. Health problems were rampant, and officials had been alerted to the possibility of a polio epidemic there (Garcia, 1948). At the request of a committee of Mathis citizens, LULAC Council members, including Dr. Garcia, traveled to Mathis on April 22, 1948 to conduct labor camp inspections at five camps. Owned by vegetable shippers, the camps lacked adequate housing, water supplies, toilet facilities, and garbage collection.

LULAC also investigated the conditions in the schools. Texas schools were initially organized to be "as simple and loose-fitting as possible" (Sellers, 1957). Consequently, new districts were established somewhat haphazardly, as populations grew and new schools were needed. Texas law dictated that school districts be governed by local boards of trustees, and local control was highly valued. An effort to consolidate schools along county lines, for example, failed (Sellers, 1957), so the implementation of state policies varied. In 1948, a Federal District Court decision made segregation of Hispanics illegal (*Delgado v. Bastrop Independent School District (1948), Civil Section No. 388, District Court of the U.S., Western District of Texas)* because "Texas had no laws segregating Latin-Americans. Mexicans were members of the Caucasian race within the meaning of the Texas Constitution and the Texas School Laws" (Clinchy, 1974). Segregation was legally justified only because of language differences. The Court allowed school districts to provide for and maintain separate classes on the same campus only in the first grade and only for students for whom tests showed English language deficiencies. From the first use of Mexican laborers in Coastal

Bend, whites had insisted that their children be segregated from the Mexican youth, and Mathis, like its neighbors, operated a segregated school system. The court order initially changed nothing.

The Mathis school district was organized to serve local white elites, those who owned the farms and ranches in the community and whose children were expected to take over the family lands and become the community leaders. For the Mexicans and Mexican-Americans, because of the accepted correlation between lack of formal education and the willingness to work as laborers, education was deemed unnecessary. Still, compulsory education laws required the school district to serve all students. Because of the large number of migrant workers and their families, most of whom took their children with them as they migrated for work, the district faced tremendous problems accommodating the huge influx of part-year students. As shown in Figure 7-14, in 1955 the number of students at each grade level grew between November and February, with the most dramatic change occurring in the first grade. Compared to the data from the first half of the 1997-1998 school year, where the number of students hovered between 150 and 200 at each grade level, in 1955 the number of students per grade varied widely, from more than 700 in the first grade to less than 90 in the seventh grade. Some students were in school as little as 6 weeks a year, and students often remained in first grade for many years. Thus, the first grade populations were very large and the number of students per grade fell with each successive year (see Figure 7-15).The seasonal fluctuations in student attendance, combined with the desire of local residents to segregate their children, forced educators into a near-impossible situation.

> When I first started here (1956-1957), we would start the year with about 1,300 kids. In the two weeks before and after Christmas, we would jump to 2,100. They would not have been in school since the last Easter and had no schooling between... Robstown and Mathis are two migrant home bases, and they are different from the surrounding schools and from what I grew up with in the Rio Grande Valley... I saw a particular record where the student had been enrolled for 6 years and had been in school 6 weeks... When I came along, about fifth grade was really the last of their schooling. [TX-DA-040, retired white educator]

Unfortunately, conditions for permanent Hispanic residents were no different than those available to the migrant students. Even in a State wherein widespread racism was so notorious that the Mexican government eventually blacklisted Texas and refused to send more workers under the Bracero program (Clinchy, 1974), Mathis stood out. According to Dr. Garcia's preliminary report:

> ... conditions in Mathis, Texas, both in the schools and labor camps were in such a condition that they required immediate investigation... There are approximately 1,700 total school census enumeration in the Mathis Independent School District, of which approximately 24 are colored children,

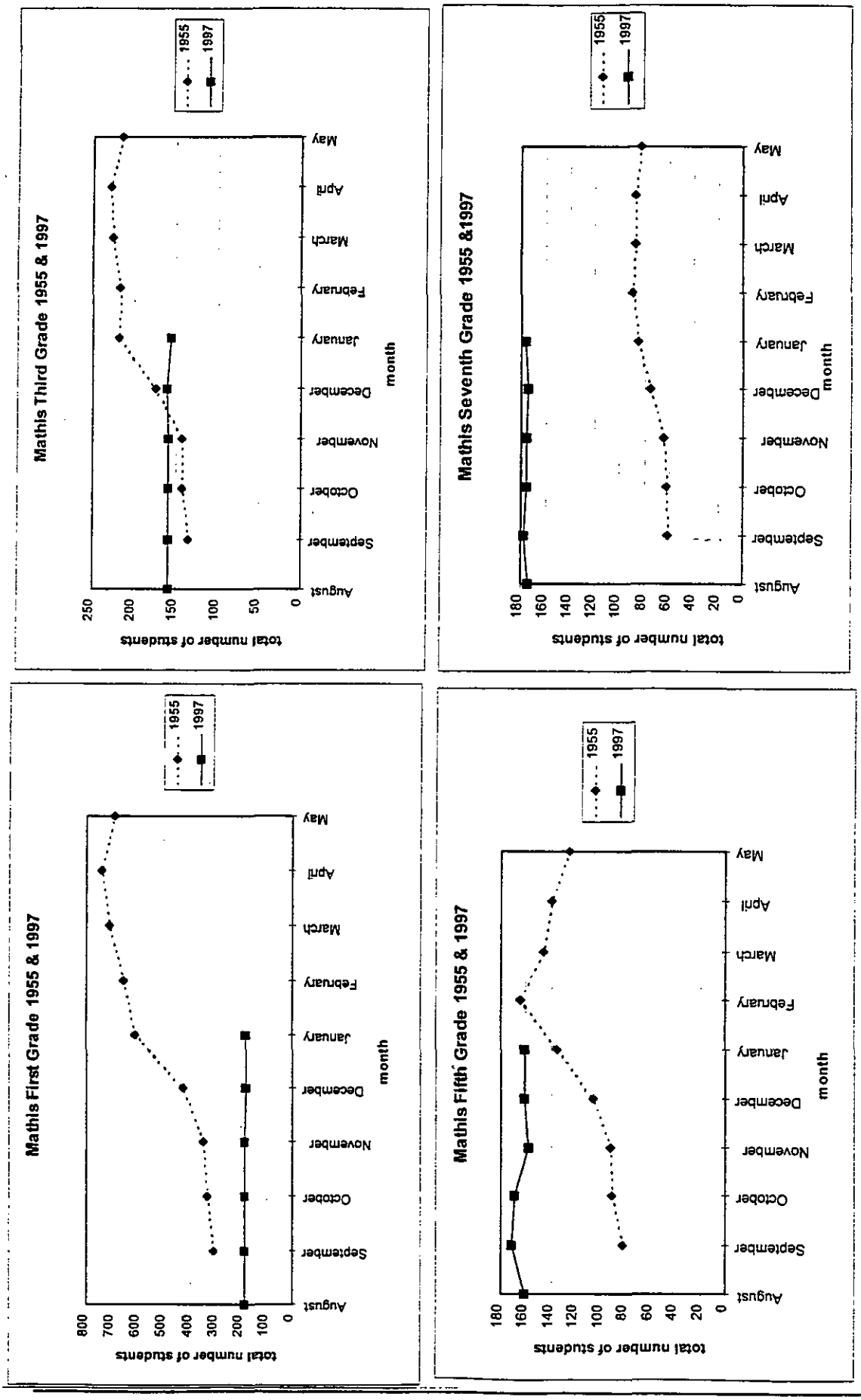


Figure 7-14. Mathis average student membership per month, 1955 and 1997.

Source: Mathis School District Administration Office.

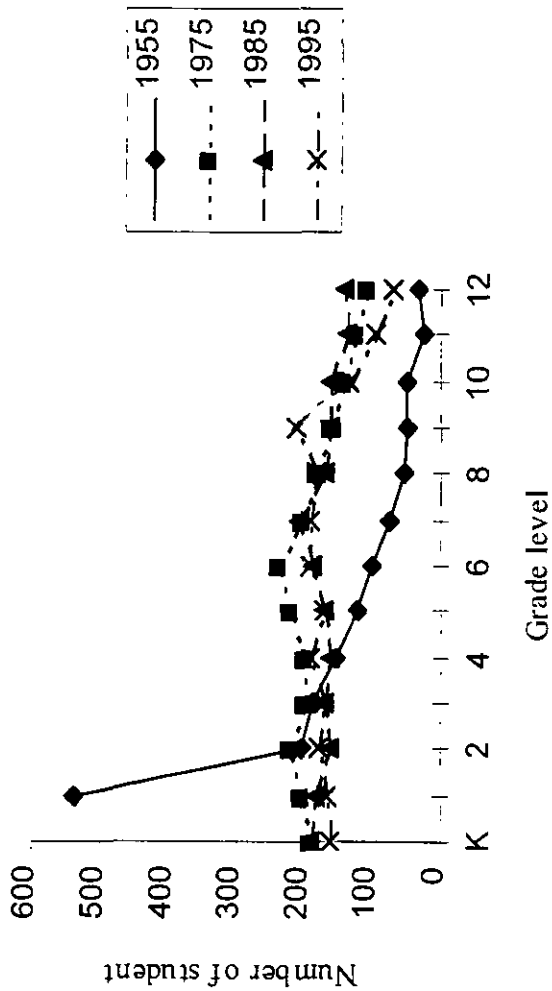


Figure 7-15. Mathis average student membership per grade, 1955 to 1995.

Source: Mathis School District Administration Office, 1998.

> leaving 1,676 white scholastics, indicating that out of the total, 1,400 are Latin American and the balance or about 275 Anglo Americans. The whole "Mexican Ward School System", as it is called, has approximately 800 children in regular attendance, taught by 16 teachers, an average of 50 pupils per teacher... The Latin American children are segregated up to the eighth grade in spite of the fact that they are in the majority according to school enrollment, and said separation is made solely on the basis of their Mexican descent, without the slightest effort being made to give them a language test... Photographic evidence indicates that the "Mexican Ward Schools" are dilapidated, old, leaky, improperly ventilated, improperly lighted, over-crowded, poorly equipped, with practically no sanitary facilities whatsoever, in fact, they are not even a poor excuse for institutions of learning (Garcia, 1948).

Local residents remember their experiences in the segregated system.

> In the 1940's... in my experience, we were not allowed to come to school across the railroad tracks until eighth grade. I'm one of the success stories. The school where we went was West Ward... During the war in the 1940's, it was small. All the Hispanics went there. How they accommodated us was they would bring in Army barracks or they would rent houses in the neighborhood. A lot of the students came late in the year because of migrant work. I would say there were at least five additional sites that had students -- old houses, army barracks that filled a city block. They just moved in buildings. There was no running water, no restroom. Outdoors was where everybody went. There was no library, no books. [TX-DA-036, Hispanic educator]

The lack of segregation beyond the eighth grade was due, not to a willingness to combine students in the upper grades, but active discouragement within the school system for continuing beyond. As elsewhere, persistence in education required that parents could afford to do without their children's labor and believed the educational system would serve their children. Like in south Lafourche Parish, only those individuals whose parents actively advocated for their education were likely to continue past elementary school. Educators articulated local attitudes toward education:

> I understand this community. I grew up in a farming community, picking cotton. My dad said I had to. My granddad, my dad, and so on were farmers. You get into a cycle of thinking... I grew up with the idea that the only reason anybody gets an education, a college degree, is so they don't have to work. Maybe that's right (chuckles)... I understand how you get into that. You're worried about putting something on the table today. [TX-DA-040, white educator]

> (In the 1940's), there was a lot of dropouts, and students were overage because they were migrants. The parents believed they needed children to work in the fields to help with large families. By my freshman year, everybody had dropped out except for me. I graduated in [...]. I was the only Hispanic in my class. In 1953, there were 9 graduates. Now, 85 percent of the graduates are Hispanic. The reason that I kind of survived was because my parents -- my father -- was from Mexico, and he was a very strong person in education although he never went to school. My mother was born in [...], Texas. She never went to school, but both were strong believers in education... One of the things that really impacted me was the teacher I had in sixth grade... and that had an impact on me to be where I am now. She made a believer out of me. Although our education in those years was not a quality education because we didn't have books. There was no such things as library books. [TX-DA-036, Hispanic educator]

Dr. Garcia's report did not incite action. Instead, it began a long, slow process of forcing Mathis leaders and school officials to pay attention to the problems of Hispanic residents and Texas law. As in other Texas locations, school officials justified segregating Hispanic children because the children spoke Spanish, they attended school irregularly, their schools were crowded, and the Anglo members of the community demanded it (Pycior, 1997). In their efforts to gain access to public schools, Hispanic leaders distanced themselves from blacks. Texas courts and school officials supported their position.

> The only requirements or authority for segregation of students in the public schools of the State of Texas on account of race or descent is based upon Section 7, Article VII, of the Constitution of Texas, and applies only to persons of Negro ancestry. Section 7 of Article VII provides: "Separate schools shall be provided for the white and colored children, and impartial provision shall be made for both". The above reference to "colored" children has been interpreted consistently by the Texas courts and the Texas Legislature as including only members of the Negro race or Negro ancestry. The courts have held that it does not apply to members of any other race. There has never been any requirement of authority for segregation of children of Latin American descent... (State Superintendent of Public Instruction, 1948)

Still, the efforts to force the integration of the Mathis Public Schools were largely unsuccessful until, in 1955, the Mathis chapter of the American GI Forum filed a complaint of discriminatory practices with the State school director. When that brought no change, in 1957, the parents of six children filed suit in Federal court. The case was settled out of court by the Mathis School District in May 1959 (*Corpus Christi Caller*, May 4, 1957 and May 12, 1959). Similar to Theodore, one individual had a significant impact on public education in Mathis, especially in his ability to cross racial lines and focus on improving education for all students (*Corpus Christi Caller-Times*, December 14, 1980). As a result, the educational

system offered more, in many ways, than might be expected of a community dependent on unskilled labor.

Clearly, because the majority Hispanic population of Mathis was effectively banned from high school, post-secondary education was only an option for the relatively small population of the community's white elites. The closest educational institution, Del Mar College, was established in Corpus Christi in 1935 as a 2-year community college (see Section 7.2.6). To meet the needs of returning World War II veterans, Del Mar began a series of evening courses designed to help the vets pass a standardized general education test. Those courses were soon offered to non-veterans, including advanced high school students. Though all Mathis residents theoretically had access to Del Mar when the college officially ended segregation of any students in 1954, in practice the low high school graduation rates, distance, and lack of a perceived need for post-secondary education meant few students, white or Hispanic, attended classes there.

7.4.2 The Decline of Migrant Labor (1964 to 1980)

During this period, the loss of vegetable farms, mechanization in cotton, and Federal minimum wage laws began to take effect. The Bracero program ended in 1964. Agricultural development in the Rio Grande Valley began to outpace that of the Mathis area, and soon few vegetables were grown in San Patricio County. The reduced vegetable gardening and increased mechanization in cotton farming decreased the need for migrant labor. Some of the former workers maintained a base in Mathis and migrated farther and farther away to continue working. Others settled in Mathis. Such changes occurred in the mid- to late 1960's, at the same time that Federal minimum wage laws covering farm workers were passed and public assistance programs were established. The minimum wage laws further reduced agricultural employment as employers argued that they could not afford to pay the higher wages. Many individuals were able to take advantage of the public assistance programs in the transition period. Unlike Mobile County, though, which successfully switched from one crop to another as agricultural markets and labor needs changed, Mathis never found another niche. In addition, because much of Mathis' industrial land was owned by the railroad, it was not available for other uses.

After hosting a largely homogeneous economy that was controlled by a few corporations (see Section 6.2), the absence of any large-scale alternatives during this period was a critical shortcoming that would have long-term consequences for Mathis. Some entrepreneurs used the skills they had developed during the Bracero years to establish local businesses. For example, several Mathis residents had purchased trucks which they used to transport migrant workers from one place to another for work. As the need for their services declined, they shifted into the trucking industry or began driving their trucks for local cement plants that were opened just outside the city. A few found jobs in the shipyards and fabrication facilities outside of Ingleside (see Section 6). However, with a weak local economic base, such entrepreneurial attempts tended to pull resources away from the community. The historical

separation of Anglo and Hispanic residents precluded even the recognition that solutions would require participation from both sides. Instead, as the economic situation worsened and some Hispanic residents linked up with statewide organizations such as La Raza and the Mexican American Youth Organization, the potential for cooperation dropped. By the late 1960's and early 1970's, civil rights issues occupied much of the public agenda, and Mathis became the site for public rallies and demonstrations. In 1969, the Hispanic Action Party gained the majority in the Mathis city government, and charges of civil rights violations against law enforcement officers, including concerns related to the shooting death of a local doctor, became front page news (*Mathis News,* January 1, 1970, July 16, 1970, October 8, 1970). Although efforts such as the 1971 plan for the development of the Mathis Central Business District continued, few changes occurred.

Nevertheless, during this period, as a result of the enforcement of Federal and State integration policies, the educational opportunities of Hispanics increased. Student enrollment continued to change dramatically with the arrival and departure of the migrant workers into the 1970's. The schools were still controlled by the white residents and some in the Hispanic community felt they would never have equity unless Hispanics controlled the school. The number of high school graduates and post-secondary enrollments remained low. Throughout the economic transition, educators worked under very difficult conditions to facilitate change. Loss of traditional occupations, lack of resources, and the separation of children from their parents, both physically and psychologically, took their toll, as local educators explained:

> We like to think as educators that we were very instrumental in getting people off the migrant route and into education. The cotton picker had more to do with it. It was a very difficult time for them. What they had always lived on was gone. It was a difficult time. There were parents who recognized it was gone. Not many. They went to the west in April and May. They would leave their kids here to finish school. Then they would send them back in time to start again [in the fall]. [TX-DA-040, retired educator]

By the end of the 1970's, though the problems of wildly fluctuating enrollment and attendance were gone, the lack of economic opportunities and shift to public assistance created new problems. Concerns that "welfare is ruining the Mexican," noted by Bill Moyers on his 1970 trek across America (Moyers, 1971) were still articulated by Hispanic residents in 1998.

> In the 1970's, when we went from not being an agricultural community, one of the things we have seen, especially from the Hispanic community, is a change in the value of the work ethic. Up until then, the Hispanic male had the pride of providing for the family, being responsible, whatever it took to make ends meet. Then, with the loss of agricultural work, a lot of people were out of work. Then we came with the trend of helping programs. That was good and bad. Good because people could make some headway and go on. Bad because it has brought to our Hispanic community an

> attitude of, "I don't care if I don't work." Now it's not a [lack of] pride anymore if you don't work... Some kids are having a hard time being goal oriented. It has become a real issue... One of the things you saw was the pay scale, for a cleaning lady or farm laborer, was so horrible that if you got food stamps for not working and it was offset by what you make, people saw they got less to work. The effect of that, of the pay wages not in line, that was a critical factor in the 1980's. People not being paid a good wage for working. It became a big issue... it was not fair. People would complain that no one would work for them, and you would ask what they paid. [When you found out], you said, "no wonder no one would work for that." [TX-DA-035, Hispanic educator]

Yet, like in Theodore, an innovative leader and supportive staff and parents created some excellent educational opportunities for students and worked to overcome racial problems. For example, in 1973 Mathis High School began an annual school bus trip to take all the seniors to Washington, D.C. The planning and implementation of that trip, from raising funds to recruiting chaperones became a community event that drew people together.

> At Mathis High, about 89 percent of our kids were eligible for free lunch... The kids had to raise money [for the trip] beginning in the ninth grade. We went on school buses. We set up a kitchen in the back of the bus... It didn't cost the kids anything. We had kids who needed money for clothes, spending money. We found people who would hire them [so they could earn the money]... You can't do [that kind of thing] without parental support... This is the 26th year... One of the things that's unique among the Hispanic culture... the families would get together and pass the hat. Your kid is going, so we will all help -- uncles, cousins, etc... We tried to teach the kids you can do things because you're involved in doing it yourself. This was one of the things that I think did more for our community in stopping [the racial violence]. [TX-DA-040, retired educator]

Even with the vision of educators who recognized the need to provide students with skills that would move them beyond the agricultural economy, the lack of local occupational alternatives offered little incentive or direction to students. Family pressures to stay home competed with the efforts of educators to encourage young people to move beyond the low wage jobs still available in the area. By the late 1960's, planners and analysts began to express concern about the regional economic impact of low educational attainment in the Coastal Bend Region and to recommend changes (SCHE, 1967; HB&A, 1968). For example, the 1968 Harland Bartholomew and Associates report noted that 11 of the 12 Coastal Bend counties, including San Patricio, had lower levels of school completion than Texas and United States averages. In 1960, only 7.3 percent of the region's population had finished 4 years of college.

> The low educational level of the region's population presents a problem of staggering proportions. Because of increasing sophistication of the technology, this will act as a severe drag on the local economy. In 1960, 48.5 percent of the people in the region over 27 years of age had only an eighth grade education or less. In 1940, this figure was 59.8 percent. While much is being done and progress is being made, more remains to be done. Closer evaluation of the low educational attainment level shows that the region's population with Spanish surnames (42 percent) has a median of below five years of school completed. (Harland Bartholomew and Associates, 1968)

Analysts paid specific attention to the legacy of neglect of Hispanic residents. A new school, Bee County Junior College, opened in 1967 and was available to Mathis students. Still, critics demanded more institutions of higher education.

7.4.3 Commuting and Public Assistance (1981 to 1998)

By the 1980's, the mechanical cotton pickers had supplanted most human workers, and even small-scale agriculture had become an unreliable source of income for most Mathis residents. Some individuals still found work as migrant laborers, some chopped cotton locally on a seasonal basis, some drove trucks to haul grain from the fields to the elevators, some drove tractors, and some worked at the cotton gins. The level and intensity of the work, however, was significantly diminished and most jobs were part time and seasonal. There were no major industries within the community, and discussions with residents revealed still a largely unfocused pattern of occupations. Those with permanent jobs, such as medical professionals and educators, form the backbone of the community and watch as many residents come and go in efforts to find work. Residents operate small businesses, but the lack of a major economic base has meant that they struggle to stay afloat. Lake Corpus Christi, which was reported to have attracted 778,000 visitors in 1986 and been the home for 10,000 people who would shop in Mathis (City of Mathis, 1987), has suffered from declining water levels and become the source of local frustration.

Social tensions and political strife have continued. The 1980's downturn in oil exacerbated the poor economic conditions of the western part of San Patricio County. Mathis felt the hardship of surrounding communities such as Alice that had been developed around onshore oil fields, the loss of jobs in the shipyards and fabrication facilities, and the cutbacks at the petroleum refineries and chemical plants along the Nueces River. The city was not the beneficiary of any major economic development initiative and the few local businesses struggle to survive. During the San Patricio County efforts to attract the Naval Homeport (see Section 6), the major attributes listed for Mathis included its location on the Interstate 37 between Corpus Christi and San Antonio, its low real estate and labor costs, and the residents living along Lake Corpus Christi (City of Mathis, 1987). Unfortunately, though Ingleside became the site of a naval air station in the early 1990's, Mathis has seen little economic impact from the facility.

Some residents, especially younger individuals who wanted to stay in Mathis, have found jobs in Corpus Christi and commute to and from work. Although the chemical plants lining the Nueces River in San Patricio County are within driving distance of Mathis, few residents have had the educational background necessary to be hired there, and the turnover at those facilities is very low (see Section 7.2.6). In a complete reversal of the earliest trends, many Hispanics have found employment on oil and gas pipelines. Residents noted that the tendency of young people to return to the community also may be changing.

> We still have farmers that do the farm season labor... Most of it is one time, ranches who need labor... We do have a few community people who still do things like watermelon picking. It's part of the work identity for some people. The only other big employers in our community are your school district, city offices, [grocery store]. Then the rest of our people do commuting into Corpus and other areas. A lot of people are not staying. If they stay, a young couple is likely to be commuting unless they are hooked up to a permanent job.. There is not a lot of incentive for young people to stay unless they hook up to the school. At one time we were very stable. Now I see this community as mobile. It has to do with the job factor. People with permanent jobs stay... The younger people have moved into other jobs, construction or.. pipeline... Right now they're doing the water pipeline to Corpus. A lot of our people do that kind of job. Business people go into Corpus. The others go to the oil field. [TX-DA-035, Hispanic educator]

The Naval Air Station in Beeville provided some jobs for Mathis residents until its closure in 1992. At that time, local and county officials began competing for a new prison to be located on the air station property, and much public discussion ensued. Texas, in general, was much more successful than Louisiana in diversifying its economy after the downturn of the 1980's, and even small communities pursued options to replace oil. For example, the January 26, 1992 headline of the *Corpus Christi Caller Times* read, "What oil busted - can prisons fix it?" In 1993, Mathis attempted to become the site of a State prison that was expected to have an annual payroll of $6 million and to provide 125 jobs (*Mathis News,* November 25, 1993). Although the prison was not located in Mathis, community residents have found work at the Cuero, San Diego, and Three Rivers prisons that have become part of the regional landscape.

Similar to Mobile County, another option for small Texas towns has been to recreate themselves as bedroom communities to which urban workers can flee. Mathis' opportunities to follow that path have been mired in problems. With the creation of Lake Corpus Christi, there was an exodus of white residents out of Mathis to new housing developments around the lake. Recent problems with fluctuations in the lake level have left docks high and dry and frustrated homeowners. Some community leaders argued that racial and political strife prevented Mathis from attracting new housing developments or economic enterprises and experiencing the revitalization that occurred in neighboring communities such as Calallen. Local residents reflect the general feeling of helplessness with this as with other issues facing the community.

> I have lived in San Patricio County for 13 years, outside Mathis. It hasn't changed much. Without the school, this town would dry up and blow away for sure... There is not a good business climate. Everybody says it's all the poor. San Patricio County has a lot of poor people... There has not been much of a change until recently. That's when those people started jacking with the lake here, about 2 years ago. That really hurt. They started letting the water out of the lake... They lowered the water and hurt the economy for the boat stands and all around the lake... Property values have gone down $10,000 to $15,000, some $20,000... Of course, in this town you have duplication of businesses, five or six video stores, three or four appliance places... and people doing the same things all around this area. If they would get the dam fixed and the water back up, they might bring in some more business. [TX-DA-038, white educator]

The long-standing association between education and labor, with education seen as a means to escape physical work, in light of limited local occupational options, has sent conflicting messages to young people. The percentage of residents dependent on public assistance has remained high, and discussions reveal concerns about the inter-generational impacts of the lack of employment opportunities.

> The majority of the younger kids are all on Medicaid. It's the same trend. Their parents were on Medicaid and welfare. That's what I see mostly at this clinic. Young mothers with their kids... Oh, definitely [there's been an increase]. I see 13 year olds. Here we do family planning, and we have 13 year olds coming in. We used to see older women, but the Federal funding has gone down. Now we have Title V, and that only concerns young women... When I was growing up, this town used to be a booming little town because of all the labor. Except for the winter when people migrated to another part of Texas to work. Now, there's nothing... In the [past] 4 years, I've had maybe three or four that don't qualify for Medicaid that have insurance. [TX-DA-039, Hispanic healthcare worker]

In the midst of this turmoil, the schools have continued to struggle, seeking to provide students the education they would need for success but with no special vision of what the future holds. The school district hired a Hispanic superintendent from outside Texas that resulted in some staff turnover, but the direction of both education and work remains unclear. Institutional pressures to meet standards established outside the district are reflected in discussions with educators.

Even more than the other States included in this study, Texas became active in the reform movements of the 1980's, with the State legislature becoming the biggest player in Texas education and initiating a "nearly continuous flow of reform legislation" (Kemerer and Walsh, 1996). The previously articulated fears that Texas would be relegated to a "third world" economic status if nonwhite and female students were not adequately educated reached fever pitch. Texas educators, politicians, and business leaders joined together to

lament the inadequate preparation of most youth, but especially minority and female students, for adulthood and gave the Texas legislature increasing license to dictate educational policy. Studies conducted at Texas universities highlighted the relationships between population and demographic change, educational patterns, work, human services, and prisons and suggested remedies (e.g., Murdock et al., 1997). Throughout Texas, schools were placed on the defensive, and the ethnic tensions in Mathis exacerbated the situation.

> I remember especially in the 1980's, every time the legislature met they would add new programs -- bilingual, special ed... Every time, they added something. [TX-DA-037, white educator]

In the 1990's, Tech Prep and similar Federal initiatives spurred Texas legislators to develop tougher educational standards. San Patricio County was identified as the most active of the 12 counties in its Tech Prep region due to strong support from the economic development, educational, and industry sectors of the communities on the eastern side of the county. Yet, Mathis has proven to be distant from the industrial activity and the classes offered at the chemical plants, both geographically and symbolically.

On November 12, 1993, the Texas State Board of Education adopted the Recommended High School Program, a sequence of courses required for graduation. Beginning in the 1997-1998 school year, school districts were required to report the number of graduates who completed the Recommended High School Program. The Texas Scholars program was created to motivate students to stay in school and, like Tech Prep, focuses on competition and the instrumental value of education for obtaining high paying jobs.

Texas Scholars is a program that motivates students to complete a rigorous course of study in high school. It helps students and their parents understand that good, well-paying jobs go to those who have prepared themselves by obtaining a fundamentally sound academic education. The program emphasizes "on level" and above courses in language arts (including languages other than English), mathematics, science and social studies. Only by satisfactorily completing these courses can students expect to compete in the high technology, global economy of the twenty-first century. (Moses, 1996)

Though Mathis High School participates to some degree in both the Tech Prep and the Texas Scholars programs, the district's involvement is somewhat cursory. Local officials and educators identified the same kinds of problems discussed throughout the study area. Again, with no clear occupational identities guiding student choice, and the messages that tie education to jobs, the ambiguity surrounding education's purpose is evident. Residents talked about the appropriateness of encouraging all students and parents to believe they can and should go to college, the lack of local employment, the need to reverse the trend of educated young people having to leave the area to find work, and the lack of employability skills among most youth. Some acknowledged a decline in the faith of education to solve social

problems. Racial tension has continued to affect hiring decisions and school policies and was frequently discussed.

> I have trouble with this thing about everybody needs to go to college. There is so much involved in so many different areas... if a child doesn't want to go to college, he's a failure... We have so many things that need to be done [and not all of them require college]... I have admiration for parents who sent a half dozen kids to school while they were picking cotton. I hope their kids are proud of them... To lose sight of the value of labor is one of the things I think we have lost. We have lost a family... I think vocational education is good, but I get a little worried that we get too specific. When we started an ag school, our ag kids built it... When we developed our [vocational] program, our program was hopefully to teach them a little of everything - welding, wiring, concrete, homemaking... We didn't have to get our kids out of here to be number one welders... not only to teach these kids these jobs, but to teach them the value of working for a living. [TX-DA-040, retired educator]

> There was a change in attitudes about education, that education was going to be the answer to our problems. I have been here 20 years. For some of us, education is still the answer. Others feel despaired. They don't see that education has opened the doors. It has not opened the doors. Their dream was that once you got educated, everything would get taken care of. It's almost frustrating to tell parents that education will be the answer. It may not be on the individual scale... On the global thing, it's still the answer. [TX-DA-035, Hispanic educator]

> Parents want what's good for the kids, but they're having a hard time, some of them, dealing with it. We have some people fighting racial issues that are 40 years old. Not that we don't still have racial issues, but they're fighting ones that are long gone... We are to the point now that the young Hispanics are going to have to get up and lead. We have some who are raising their kids to distrust an Anglo because he's Anglo. They're the ones who are going to have to answer to what takes place. [TX-DA-040, retired educator]

> Mathis has had to work hard. We had big numbers of dropouts, not only students from low socioeconomic families. Across the board. Kids that had opportunities were dropping out as well as the others... I would say a lot has to do with our society's morals and values and beliefs... What I have seen, the Hispanic community raises to the occasion of politics, for city politics. As a community politically, we have a lot of sparks. When it comes to school issues, there is a negative feeling about the school and the community. It has not clicked that the school and the community are together. It has taken a toll in parents feeling that the school is open to their needs... The business of the

> school was the center of the Anglo community. Mathis was known to be the other side of the tracks. As small as we are, we had the tracks. Until maybe 10 years ago, this, where the school is, was an Anglo [neighborhood]... The trend is that the Anglo community is not here anymore. They are moving out to the outskirts. [TX-DA-035, Hispanic educator]

Despite the strife and general despair, some residents noted positive changes. Local businesses are supportive of the schools. Many young people do not share the racial prejudices of their parents. Some believe the welfare-to-work reforms of the late 1990's will have a positive impact on the young women of the community by helping them feel they are employable and improving their self-esteem.

> Back in the 1960's, we still had to stick to your own [race]. Now, for the kids, it's no big deal. The crossover sharing, communication, and friendship is so different from when we were growing up. School has changed that. That has been a big plus. They have been forced to build these relationships. [TX-DA-035, Hispanic educator]

Mathis' relationship to the rest of San Patricio County and to the OCS-related industries along the coast does not appear likely to change. Although improved highways and low gasoline prices have made commuting easier and problems in Corpus Christi have pushed development to the smaller communities surrounding it, Mathis is not poised to attract new development. It has few local amenities, such as competitive schools or shopping malls, for commuting workers and their families and the problems at the lake have precluded attracting retirees and others seeking a rural landscape. Some individuals will continue to work in OCS-related activities, but the proximity of the employers to Corpus Christi, the propensity of young people to leave the community, and the absence of any specialization among Mathis workers forestall any particular link between Mathis and offshore oil and gas activities.

7.4.4 Comparison to South Baldwin County, Alabama

The final community to be considered is south Baldwin County, which is defined here as the catchment area for Foley High School and centers on Gulf Shores with some attention to Bon Secour and Foley (see Figure 1-7 for a map of Baldwin County). Historically, Gulf Shores was a locally important beach community with few winter residents, Bon Secour was a fishing community, and most of the students attending Foley High came from agricultural families. Each of these aspects of the community changed drastically between 1960 and 1998. Gulf Shores began working to broaden its tourist base, and Hurricane Frederic of 1979 was a major boost to that effort (see Section 6). Like elsewhere in the gulf, Bon Secour was affected by the decline in shrimping and has fought to resist annexation by either Gulf Shores or Foley as those two communities have grown. Its all-white population was extremely stable until the 1990's when people fleeing Mobile, but unable to afford to live closer to that city and a few Hispanics working in agriculture, began settling in the area. The shrimp sheds of Bon Secour still provide jobs for laborers. Foley's agricultural economy shifted first in the

1960's when growers began contracting for migrant workers rather than relying on the local labor force, then as potato farms requiring only migrant labor shifted to sod farms hiring year round workers, next with the return of cotton farming, and again as housing developments began to replace agricultural land in the white flight from Mobile (see Section 7.3). Foley's new retail outlet mall has created service jobs and a few light industries have been established to provide employment. Where teenage youth once worked on the farms and in the potato sheds, they are now employed at fast food establishments and the mall.

Gulf Shores, with its mostly white, affluent clientele of tourists and retirees, appears to have little in common with Mathis, Tex., but in Gulf Shores as in Mathis, there is a sense of ambivalence about the purpose and direction of both work and education. The shifting economy of south Baldwin County, from agriculture to residential housing developments and tourist accommodations demonstrates a non-industrial path that Mathis did not or could not take. Educators summarize the history and changes:

> If you were in south Baldwin County 30 years ago, every town would be almost full of migrant workers. Most of them were Hispanics, Mexicans from south Texas. Some blacks from south Florida. They would be in every field you passed, digging the potatoes, putting them on trucks, bringing them to the potato sheds... We don't have a lot of migrants anymore. We don't have potatoes anymore. We do have migrant workers around here, but they are scattered... The potato industry is dead. We had several poor years and bad rain. The property values started going up, and many were able to borrow a lot of money on their farms... some jumped into the boom in Gulf Shores... A friend of mine who is a farmer with land east of [Foley] told me, "I can sell my land now and make more than I could in a lifetime of farming." [AL-DA-020, high school educator]
>
> [The school in Gulf Shores] was built in 1980 immediately following Hurricane Frederic, which is kind of looked at as a turning point for this area. About the same time, the interState system was finished, and it funneled a tremendous amount of the tourist industry to this area... It evolved from small tourism and fishing. There has been a big push to get more of a stable economy... Also in 1980, another trend [began]. Retirees from the north began coming here. Within the past 10 years or so our winter economy has become strong like our summer economy. That keeps things stable. [AL-DA-027, elementary school educator]

Like people in Mathis, few residents of south Baldwin County have participated in OCS-related activities. Though some individuals have worked offshore and in the shipyards in southern Mississippi, most have found employment in the area or commuted to Mobile or Pensacola. As Gulf Shores has grown and become a major tourist attraction, attitudes toward offshore oil and gas have come to mirror those of Florida's coastal residents. Although most of the objection to offshore development has been over the appearance from the beach, a few

people raised other concerns. A major difference between Gulf Shores and Mathis is this awareness of OCS activity and the growing sentiment against it.

> My husband worked offshore for 22 years... Everybody complains about the way [the rigs] look. I don't have a problem with the way they look. What bothers me is that they are poisonous wells. For us to go on a nationwide campaign because we don't like the way they look... we have to have real reasons, like spillage, health hazards... At the hearings in Gulf Shores... we were told we'd be in the new buffer zone, 5 to 15 miles out... They said it was understood that we would have no new wells or leases... I don't think they're going to abide by the buffer. They don't have anything to tell them to abide by it in this area. [AL-DA-038, business owner]

The shifting economy has been accompanied by significant demographic changes. In its evolution to its present State, Gulf Shores attracted many low and middle income residents who found work in construction and service and an opportunity to live in a pleasant environment. During the construction boom that followed Hurricane Frederic, many people went in and out of the community looking for jobs and a place to settle. As the condominiums and tourist resorts have taken over the community, rising property values have eliminated inexpensive housing so that the local people employed in the low-wage service industry, such as restaurant workers and condominium housekeepers, have moved to places like Bon Secour.

At the same time, reminiscent of Mathis following World War II, programs have been developed to bring workers from north Baldwin County and from foreign nations characterized by poor economic conditions. In the effort to attract wealthy visitors, de facto and de jure policies have reinforced the separation of low-income workers from the higher-income residents and visitors. The wealthier year-round residents, many of whom are newcomers, work for higher wages in businesses that have proliferated in Gulf Shores, such as the real estate and insurance businesses. Through special arrangements, hotels have hired large groups of workers from overseas and provided them temporary housing. Some of these individuals have chosen to remain in the area rather than returning to their home countries, exacerbating the housing problems for low-income residents.

A privately operated bus service was established to pick up hotel service staff from their homes often over 100 miles away and transport them to their jobs. Two new trailer parks have been built in Bon Secour, and locals expect that younger families who cannot afford homes in the area will be able to live there. Educators identified higher levels of transience as one of the big problems they face.

Having been initially replaced by migrant laborers, neither black nor white locals work in agriculture in any great number. As year-round agricultural jobs have become available on the sod farms, some Hispanic families have settled permanently in the area. Due to difficulty

finding local individuals willing to work as laborers, the sod farms also have begun using prisoners (see Section 6.2.3). The influx of whites from Mobile has reduced the ratio of blacks in Foley; many blacks remain segregated in an area known locally as "the quarters." Until 1950, the two black high schools in Baldwin County were located in Daphne and Bay Minette, an hour's travel from Foley. Bon Secour educators describe their student body:

> Person 1: In our school, we have about 9 percent Hispanics. The rest are white. There are very few other people [living here].
> Person 2: We don't have any black families that live here. There are a lot of black workers at the fisheries, but they don't live here... [AL-DA-028, 029; elementary school personnel]

A small population of Creoles remains somewhat segregated in Magnolia Springs. Similar to the Houma of south Lafourche, Creole students were segregated from both blacks and whites and did not attend public schools until desegregation.

> I'm finishing my eighteenth year here. Since I've been in education, we closed the small schools and consolidated to large schools We went back into those areas and built new schools... When I went to school [in the 1950's], we were segregated, of course. Not only black and white. The Creoles west of here had their own schools. They live in Vermont Park in Magnolia Springs... At one time St. John's was the Creole Catholic Church. There is still a lot of culture there. [AL-DA-020, high school educator]

In contrast to the conflicts in Mobile during integration of the schools, longtime residents remember that Baldwin County integrated its schools in the 1969-1970 school year without major disruption.

South Baldwin's educational system has changed along with the community. Though the area boasted only a handful of college graduates following World War II, by the 1950's many parents supported the schools and wanted their children to have the education they had not received. With few local jobs requiring a college education, though, many of those who left for college never returned. Many new schools, including one in Gulf Shores, were built during the 1980's with the new economic base that accompanied the post-Frederic boom. Due to continued growth, the Gulf Shores school was split into separate elementary and middle schools. By 1998 a new high school had been planned for Gulf Shores to accommodate the growing population and as part of the city's effort to build a stable community of residents in the face of seasonal influxes and outflows. The Faulkner Community College opened in Foley in 1985 and moved to Gulf Shores in 1993 (http://www.faulkner.al.cc.us). Unlike Bishop State Community College across Mobile Bay, Faulkner has no technical training programs; its 2-year curriculum includes academic and continuing education courses.

During the 1980's and 1990's, school administrators struggled to cope with a student body that suffered from significant seasonal fluctuation. One principal contacted school administrators in places like Jackson Hole, Wyoming and Las Vegas, Nevada to find out how they dealt with the high rates of transience and set up a special plan for students identified as transients. Short-term employees and unemployed individuals would arrive in the community, enroll their children in school, and stay only short periods of time until they realized they could not afford to live there. By the late 1990's, however, the high turnover had slowed to around 10 percent, seasonal fluctuation was less marked, and family stability had increased (Gulf Shores Elementary School self-study documents).

> When I came here 10 years ago, one of the biggest problems was transiency... That is lessening somewhat, but it will continue. People are going for that pot of gold. They want to be happy. We have had people drive up in their RVs to register their kids. That has lessened... We are seeing more permanent residents, retirees. More professionals are settling here and setting up permanent homes. People who have to travel for a living, [they decide] when I'm home, I want to be at the beach and the golf course. I think some of the transients, the cooks, waitresses, condo cleaners, are moving out of the Gulf Shores area and commuting to work. [AL-DA-027, elementary school educator]

An increase in retirees and residents working in the higher wage service jobs helped stabilize school populations, especially in Gulf Shores. Bon Secour's school has continued to grow steadily along with the community. School officials noted an increase in the number of low income and working parents, working mothers, and people from outside the community. Although the migrant laborers came in to south Baldwin County in large numbers, local schools closed by mid-May so students could work in the potato sheds and fields. Thus, unlike in Mathis, the migrant workers' children did not impact the public schools. Private, church-run summer programs were developed specifically to serve them. In 1997, Foley High School began a High-Schools-at-Work program, and in 1998 was just beginning to train teachers and get a committee of students, teachers, and businesses together. In general, by the 1990's, the issues of concern to south Baldwin County school teachers and administrators were heard in every study community: parent and student apathy, materialistic values, and the need for options other than college for students.

> We see more dual parents working. This is a low-income area. We have less direct parental involvement. For instance, we have hardly any come up to the school and work. They have to, to make it. We have a lot of people for whom this is not their hometown. When I was first here, everybody's parents, grandparents, etc. [had come to this school]... We have a lot more transients... [AL-DA-028, elementary school educator]

> The majority of our kids are people who moved into the area after '79. They bring in the ideas from where they came. We have a very diverse population. Very few farm kids are left... They are coming from everywhere. We do have some fleeing areas like Mobile. You see more of that on the eastern shore... For some many of [our students], their priorities are not education. They are working to pay the car payment or the insurance on the car. If they have a choice of homework or work, work takes precedence. I feel it's very detrimental to the education of our students... A lot of our kids go on to college. You're seeing the effect of years ago when the schools tried to get the students on to college. We are trying to implement a new program, "Schools at Work," to emphasize the vocational aspect without watering down the academics. Here in Baldwin County, you go to vocational school your junior year. Most of our kids who need it have dropped out by then. [AL-DA-020, high school educator]

These patterns of development in Gulf Shores and the surrounding communities reflect a common U.S. trend in areas dominated by tourist economies. Given the conflicts that have arisen elsewhere between offshore oil and gas activity and tourism (Freudenberg and Gramling, 1994; Goldstein, 1982; Gramling, 1996), it is likely that sentiment against OCS activity will increase. The impact of a convergence of that sentiment with the growing resistance to industrialization across Mobile Bay in southern Mobile County (see Section 6.4) remains to be seen. Just as there is yet little coordination among the people in the City of Mobile and those along the coast near Bayou La Batre, communication across the bay generally has been limited to a handful of activists. However, concern about the speed and intensity of coastal and inland development east of the bay and the scope of industrial development on the western shore may coalesce at some future point.

7.5 The Evolution of Occupation and Education and the Influence of OCS Activities

Education and work are closely related in any regional or national economy, and the particular history of the American South has shaped the relationship between occupation and education within the Gulf Coast communities of Texas, Louisiana, and Alabama that were the focus of the community ethnographies. Three patterns of evolution have been identified in this section, with the path to industrialization being the most obvious distinction among them. Regardless, in all cases, though there may be remnants of earlier years, the occupational choices of the majority of local residents at the end of the twentieth century differ significantly from those of residents immediately following World War II. Likewise, the majority of community residents face greater educational opportunities than their predecessors. The centralization and institutionalization of education occurred gradually in response to changes in the nature and structure of individual and family life. As work increasingly became an activity separated from other aspects of life, in time, place, and the nature of the activity, preparation for that work changed accordingly. Even to the present, with the most recent permutation of occupational education in the school-to-work initiatives, education and industry resonate.

World War II was a major turning point for work and education in the South because of its lasting impacts on who became part of the workforce and the skills and expectations with which workers entered the postwar economy. The prosperity following the war and the transition for many communities to much greater participation in a regional, national, and global cash economy also dramatically altered the material expectations, especially of young workers and their families. The promotion of college as the easy path to corporate jobs and the American dream led families to expect their children to pursue higher education and consequently diminished the power of a college education. Traditional views of social capital that unquestioningly equate years of formal education with community gains no longer function. While many older adults still struggle to make sense of the changes, and many are losing out in the transition, some young people are figuring out how to make the system work for them. For better or worse, individual competition has been embraced by these individuals. A young entrepreneur in his thirties has become one of the most aggressive fabricators in the new industry. Another one, whose father was laid off during the 1980's, commented:

> Not even degrees help nowadays. They're important, but everybody's getting them. You have to stand out from the others... For industry, it is a different world for how people were.. [TX-DA-202, young entrepreneur]

OCS-related activities have demanded large numbers of workers, both skilled and unskilled. Where they have played a prominent role in the community economy, as in south Lafourche Parish, they have had a significant impact on the when, how, and why of the transition from education to work. Especially as other sectors of the economy such as shrimping and trapping have dwindled, large companies with huge workforce needs have had the power to significantly alter the occupational landscape. By taking students out of the educational system or by leading them down one path instead of another, the companies servicing the oil and gas industry also have affected the educational system. Most recently, for example, school-to-work initiatives coincided with a tremendous demand for labor and with businesses needing the ability to obtain workers quickly.

In the words of a south Lafourche Parish educator:

> The oil industry was always there so to speak. A kid in the early days could quit school and go to work for an oil company. Not to blame the oil companies. You could also quit and go fishing... One of the problems in our area is that a kid could quit school and make money. At some point, the oil companies began requiring a high school diploma. Today you probably have to have more than a high school diploma to work for an oil company. You also cannot work directly for the oil company. At one point, you could be hired directly by the oil company. Today, you have to go through contractors. It has always been there. What is new now is the amount of it that is being done. [LA-DA-010]

A young man in his early thirties talked about the transition that took place in south Lafourche during his lifetime. His ambivalence about the changes still taking place reflect the recency, speed, and perceived permanence of the changes.

> When I was younger, it was nice to get high school diplomas, but it was not considered really necessary. My mother finished sixth grade, my father finished high school, but it didn't matter. The petroleum business was booming when I was young. It fell out when I was in high school. People started getting the idea that college was really necessary. Kids now are exposed to stuff I never had until high school. My son is now in eighth grade algebra. We had to have a certain GPA and parent consent to take algebra in high school. Unfortunately, with [the change], we are losing a lot of what this area is known for in its heritage -- French talking and all -- what made this place unique. The guys who I grew up with spoke more French than English. I understand French but don't speak. The kids now can't speak. It's amazing how fast things change. We're slower than other places, like New York and California, but it is amazing how fast things change. My dad told me about getting the first light bulb down here, the first car, etc. Everything's got pros and cons and all, but it's amazing to me how this place is growing and has changed. Lafourche is really growing, especially the boating industry. They got a lot of misconceptions about this place. We did not modernize quickly, but people think we all have alligators in our backyards. [LA-DA-015]

Differences in the educational and occupational trajectories of the six study communities stem from: (1) economic diversification to buffer cycles in the dominant industries; (2) proximity to urban and industrial areas to which residents can commute to work; (3) the ease of the transition from prewar economic activities, such as fishing, to industrial activity, such as servicing offshore oil and gas rigs; (4) the diversity of skills and opportunities of individual residents; (5) racial and ethnic makeup; and (6) community cohesion which dictated who would and could leave and who would or could not. South Lafourche Parish sits at one end of the spectrum of OCS involvement, illustrating the extensive and complex ways that the offshore oil and gas industry have permeated and continue to affect business, community and individual life. The rapid and far-reaching dynamics of the downturn were a consequence of community involvement with offshore oil and gas. As shown in Section 3, south Louisiana's reliance on offshore oil and gas has put local communities almost completely at the mercy of world oil and gas prices and, consequently, the world economy, with little, if anything, to buffer the economic swings. The apparently homogeneous local economy was, however, supplemented at the individual and household level by an incredible array of skills, from carpentry to crawfishing, many of which took place outside the formal economy, but which kept people going in hard times.

The coincidence of strong family and community values that have led southern Louisianans to adapt to new occupational choices to stay in the community and the lack of choice in

becoming home to the oil and gas industries have meant that the educational system has had to respond to the local economy to give youth the skills they need to stay home. Especially on the boats, residents proudly exerted control over their job lives, becoming very proficient at what they did, and, often with acceptance and even respect from their employers, moving from one job to another. The early adaptation to servicing the oil economy has come at a cost -- only a few have become the owners and managers of companies -- and recent industry restructuring indicates that even in places like south Lafourche Parish the old strategies will no longer suffice. As consolidations, mergers, and other forms of reorganization take place and fewer, including those who hire and fire, perceive they can exert control over their work lives, work becomes less tolerable and more seek to get their children out of the industry -- via the route they have been promised, higher education.

At the other end rests Mathis, an agricultural community that developed from the exploitative use of inexpensive (to the farmer) labor, illustrating the continued struggles of its residents to gain access to education and jobs and the consequences of welfare policies that bailed out community elites as much as they recognized the complex needs of the poor. Gulf Shores, also at the low end of the involvement scale, demonstrates, in contrast, how communities that cater to wealthy residents from outside the area and develop even defacto policies to exclude the poor and racial minorities can exist in relative ignorance of the problems facing their neighbors. Both of these types of communities illustrate that even in counties and States with significant dependence on offshore oil and gas activities some communities have carved out futures that, for better or worse, have shielded them from the impacts.

Between the two extremes lie Theodore, Schriever, and the Coastal Bend. The Texas coast has some of the characteristics of south Louisiana but shares Theodore's benefits of greater diversification and proximity to a city, Corpus Christi. However, the Coastal Bend is still more dependent on oil and gas and not as able to buffer the surrounding communities as is Mobile. Schriever is similar to Theodore in the relative absence of local industrial facilities, its proximity to a city, Thibodaux, and diversified industries such as a large agricultural equipment manufacturer, its continued agriculture, and the tendency of its residents to commute. It nevertheless lies within a parish in a State with greater dependence on offshore oil and gas and, therefore, rocks with the ups and downs to a much greater extent than either of the other communities.

Despite the differences, in all communities, as the level of skill needed in the workforce has increased, particularly due to technological changes, the demands placed on educational institutions, for students on their first pass through and those returning for retraining, have increased. Likewise, despite the flurry of interest in and activity surrounding work and education in communities impacted by OCS activities, these communities have not strayed far from the basic tenet of southern education: education provides a way out of physical labor. The increased materialism of the postwar years and new messages about education as a mechanism for achieving racial and ethnic equity have been adopted in these places as well.

The upturn in OCS activity created a new demand for skilled labor in the 1990's, and employers had neither willing labor nor skilled professional and managers. Having lived through the downturn of the 1980's, many workers were reluctant to return to the old days. Local educators and industry promoters grabbed hold of national educational initiatives, such as Tech Prep and school-to-work, in an attempt to reestablish a local workforce. Communities such as Mathis, though, face the same challenges of an ambivalent young adult population without any significant local occupational choices to which students and residents can aspire. Even where educators and industrial partners recognize the importance of education (or at least training) in the new economy and implement programs to address the gaps between industry need and student ability, many ignore the magnitude of the problem they face. The short time period during which equal opportunity to education has been even a Stated goal, the high expectations of education among many disenfranchised groups coupled with the continued rejection of education by others, and the trail of broken promises from industry all have conspired against them.

Throughout the study area, older residents, even those in their thirties, acknowledged and often lamented the deterioration in the value placed on a job well done. In south Lafourche Parish, for example, where hard work was a source of pride among previous generations, negative youthful attitudes toward work have derived at least in part from living through parental layoffs and industry restructuring. In the early transition from fishing to oil, the risks associated with the oil industry, including the upturns and downturns, were accepted much like those that face a shrimper or oyster fisher. Individuals were willing to gamble and drew upon their vast skills to survive when things turned against them. In the 1990's, as industry restructuring has revealed that layoffs and buyouts are not merely inevitable responses to an unpredictable industry, residents have questioned their participation in it, and they share their sentiments with their children. Similarly, in Mathis, where pride once defined a migrant worker's behavior at work, youth have become the victims of the dramatic loss of jobs in the 1970' s and an inability to regain those jobs because of a restructured agricultural sector. The increasing emphasis on money and wages was intended to improve the livelihoods of local residents, but it undermined existing attitudes toward work as an inherently valuable act.

Education, once held out and accepted as the solution to social ills, has been unable to meet the growing list of challenges society turns to its schools to solve. The attraction of school-to-work and college preparatory programs is the narrowing of the purpose of education to one that has a measurable outcome: a job, whether via on-the-job training, technical school, or college. As the value of work has been eroded, so, too, has that of education.

8.0 Synthesis of Findings and Conclusions

8.1 Introduction

This section identifies overarching findings and conclusions drawn from the three issues addressed (economic and social characteristics, community fabric, and work and education) and the methodological approach. The issue findings and conclusions are discussed first. When appropriate, these findings are compared and contrasted with findings of previous studies of offshore oil and gas impacts and nonextractive, but regionally dominant industries. Finally, findings and conclusions about the methodological approach are discussed.

8.2 Issue Findings and Conclusions

Similarities Among Study Areas, but No Single Story. While there are similarities across political boundaries in the GOM region, there is no one story as differences occur between and among counties. With the exception of Mobile County, population in the study area counties in 1930, at the beginning of the period of interest, was very similar. Mobile County experienced the largest absolute increase in population between 1930 and 1990, while Baldwin County experienced the largest percentage increase in population. Except for Baldwin County, which had the highest percentage change in population, the percentage change of population in the other counties was in the 64 to 70 percent range. The proportion of those 60 years and older grew in all study area counties, but in 1990 was highest in Baldwin County, which has a large retiree population in the coastal area.

Over time, the economies of the five study area counties have changed from principally agriculture (except in Mobile County) and manufacturing to services, retail trade, and government for employment and, services, government, manufacturing or retail trade for earnings. The major sources of employment in all the study area counties are similar to their respective states, and to the nation, which is becoming increasingly characterized as a service-based economy. The major source of employment for all study area counties, except San Patricio County, is the service industry. Government is the major source of employment in San Patricio County. Like the nation and their respective states, the major source of earnings in all study area counties, but Lafourche Parish and San Patricio County, is services. Government leads earnings in San Patricio County and Lafourche Parish.

Baldwin and Mobile counties have had very similar and consistent major sources of employment and earnings, although like the other study area counties, there have been changes in the major employment and earnings sources over time. Lafourche and Terrebonne parishes started and ended with similar major sources of employment (agriculture, retail/wholesale trade, and manufacturing in the beginning and services, retail trade, and government at the end). In between, they shared some common major sources but then had at least one difference in the major sources of employment. Mining, which includes oil and gas extraction, was a recurring major source of employment only in

Terrebonne Parish, in 1950 and again in 1960, 1970, and 1975. The transportation and utilities sector has been a recurring, but not consistent, major source of employment in Lafourche Parish. Since 1980, major sources of employment in San Patricio County have been similar to those in Baldwin and Mobile counties (services, retail trade, and government).

Agriculture is a common denominator among the study areas, and except in Mobile County, part of the story of the study areas during the period of interest. However, the type of agriculture differs by study area. The movement away from agriculture as an important source of employment varied by study area county and the reasons for the change varied as well. Natural and socio-political forces changed agriculture in Mathis, Tex. from labor intensive vegetable production to land extensive dry farming of grains and cotton. Agriculture was an important source of employment in San Patricio County until the 1960's. Agriculture became less important in Lafourche and Terrebonne parishes in the 1950's. Sugar farming in Schriever, La., located in Louisiana's sugar bowl, was transformed by the demise of plantations, labor strife in the sugar mills, mechanization of the sugar harvest, consolidation of farms, and retention of a small workforce. Sugar's future depends largely on Federal farm policy, with the current support system set to expire in 2002. At the same time, there is new technology and renewed interest in potential oil fields in Terrebonne and Lafourche parishes. In southern Baldwin County, not unlike other parts of the country, productive farmland competes with residential development. The farms meet urban-based demands for sod and plants and use a workforce of foreign labor and work-released prisoners. Agriculture was an important source of employment in the county until the 1960's.

The impacts of OCS oil and gas activities have varied among the study areas. Direct impacts have been felt most keenly in the South Louisiana study area, particularly south Lafourche Parish, an area with strong ties to marine resources -- both fish and oil. Early on many residents combined traditional trawling and trapping occupations with oil industry-related work. Local boat building expanded to support the oil industry. OCS-related activities demand a large labor force of skilled and unskilled workers. In areas where the industry has been a major presence, as in south Lafourche Parish, the industry has had a significant effect on education and the transition to work. When other sectors of the economy decline and the oil industry has a high demand for labor, the industry affects occupational selection. That in turn, has altered the educational system either by offering jobs before formal education was completed or by influencing the curriculum so that graduates were educated to feed into the oil industry. This is not dissimilar from regions with other dominant industries, such as textiles, where vocational education and community colleges offer programs specializing in the local industry.

In the other study areas, the impacts from oil and gas are seen in different ways. Coastal Bend, Tex., interacts with the industry as a fabrication center, a refining region for domestic and foreign oil, and the home port for the U.S. Navy's minesweepers whose primary task is to keep the world's harbors and shipping lanes clear. The oil and gas industry is relatively

new to the Mobile Bay study area, but the area has a long history with heavy industry. Industrial development apart from the oil and gas industry continues in the region.

Oil and gas impacts differ within the study areas as well as among them. For example, oil economics has impacted the agricultural communities in the study areas. Good times for the offshore oil industry can be difficult times for farmers in the study areas and elsewhere, who are squeezed when the price of fuel rises. Oil prices are, however, set outside the region and are not a direct effect of OCS development.

In addition, a number of global trends relate to the similarities across communities:

- Ascension of technology and knowledge-based economies
- Globalization of the economy and resulting competitiveness
- Consolidation of oil companies

The finding that there are similarities among the study area counties but no single story is similar to findings of several previous studies. These include writers who have noted that resource dependent communities are not homogeneous (McDonough and Parker, 1995 and Krannich and Zollinger, 1997); prepared historical analyses of three California coastal counties adjacent to offshore oil and gas development (Ventura, Santa Barbara, and San Luis Obispo) (Molotch and Freudenberg, 1996; Paulsen et al., 1996; and Nevarez et al., 1996); and developed a methodological approach to describe communities in the throes of industrialization (Gold, 1985).

Resource dependent communities face a range of conditions and trends. Some are developing and dynamic, some experience economic cycles, others are in a state of decline or transition. Krannich and Zollinger (1997), for example, offer four general classifications of resource dependent communities:

- Sustained development -- areas which generally have stable and long-term patterns of economic activity associated with resource production (Price, Utah, a community with large-scale coal mining as the dominant economic activity for a sustained period of time is used as an example).

- Cyclical development -- areas that have experienced unstable and cyclical patterns of development over several years [Gold and hard-rock mining areas (Beatty and Tonopah in southern Nevada) and petroleum resource extraction areas (Big Piney in southwestern Wyoming) are offered as examples.]

- Transitional development -- areas typically exhibit significant levels of dependence on traditional resource-based economic activities; the social and economic character of transitional dependent areas, however, is often substantially changed because of a

transition involving both long-term reductions in the level of reliance on extractive activities and increasing levels of economic diversification. (Examples include Driggs, Idaho; Moab, Utah; and Winthrop, Washington -- places where retirement and recreational-based activities have gradually replaced the long-term dominance of ranching, farming, mining, and/or timber production.)

- Declining resource development -- areas characterized, in general, by a high level of reliance on traditional resource-based activities. Employment and economic opportunities associated with those activities, however, are typically in a long-term decline. There are few, if any, prospects for either a renewed surge of resource extraction or the emergence of alternative sources of employment and economic activity. (Examples include remote logging and timber mill towns such as Eureka, Montana and Pierce, Idaho.)

The five study areas display many of the characteristics pertaining to the four classifications. None of the communities, however, appears to neatly fall under any of the classifications. In general, Terrebonne and Lafourche parishes appear to fall between cyclical and transitional resource dependent communities. The other three communities do not exhibit a large or substantial direct dependency on oil and gas extraction activities (i.e., mining employment does not account for a large percentage of total employment).

Like Louisiana and Texas, Ventura, Santa Barbara and San Luis Obispo counties in southern California have a long history of development of onshore oil reserves. Offshore development began about 100 years ago. In contrast, however, OCS development began later in California than in Louisiana and is only a fraction of what has occurred in the GOM. For example, in 1995 offshore California OCS activities accounted for less than 1 percent of all platforms in the United States, about 2 percent of U.S. offshore oil production, and about 2 percent of U.S. offshore gas production (MMS, 1997). The remainder was in the GOM. Santa Barbara County was the site of the 1969 major oil spill from an offshore oil platform which heightened awareness of the environmental impacts of the industry.

The historical analyses of the three southern California counties identified several similarities with the stories told in the GOM study areas: natural resources of oil and scenic beauty (Santa Barbara and San Luis Obispo counties); affluent retirees and tourists (primarily Santa Barbara and San Luis Obispo counties); changing nature of agriculture (Ventura, Santa Barbara, and San Luis Obispo counties); military presence (Santa Barbara County); a port servicing the oil and gas industry (Ventura County). Local state universities in Santa Barbara County (U. of California at Santa Barbara) and San Luis Obispo County (California Polytechnic University) were identified in the historical analyses as major influences in the counties' economies and views on the oil industry and environmentalism (Molotch et al., 1996; Nevarez et al.,1996; and Paulson et al., 1996). This study addressed only the role of

the local university in the South Louisiana study area in the transformation of work and education.

The historical analyses of the California counties, like this study, identified significant geographic differences within the counties. In the California counties, these differences sometimes related to the attitudes of the residents toward the oil and gas industry. Since these California counties have experienced substantial opposition to oil and gas development, the subcounty differences in view are important to understanding opposition and potential impacts. In the GOM study area counties, subcounty differences were also identified. In all of these studies, useful insights to identifying or understanding impacts were found in the detail -- the detail of the statistics and the detail of subgroups and subareas within the county.

Gold (1985) noted that small rural communities in five Western states have much in common, although their individual stories and populations differ. He used these observations to construct a composite community to illustrate what life in a rural community is like before, during, and after the industrial intervention of a strip coal mine and associated power plant. His focus was, however, on community social organization, culture, values, and lifestyle, issues not addressed in this study.

A study of the effects of military base closures on local communities showed, in the short term, different effects in the three areas studied. In general, the effects were not catastrophic and were not as severe as predicted (Dardia et al., 1996). The study of base closings also showed that base closure effects were not as clear cut as had been thought. The actual experience depended on the site, with many impacts falling on individuals and family and individual firms rather than the entire community. The overall level of economic growth in the area of the base closing and of the nation influences the effects of base closings.

Federal, but Non-MMS, Policies Affected Study Areas. The study area communities were exposed to changes from a variety of sources during the study's period of interest. OCS-related activities and regulations were only one and was not the driver for all changes that occurred during the period of interest. Federal policies have driven much of the change in the study areas. The similarities across the study areas often relate to the national, although non-MMS related, policies. The text touched upon some of these national policies and trends:

- GI Bill and access to education for World War II veterans
- Altered perceptions of World War II veterans towards racial and ethnic tolerance
- Civil rights movement and school desegregation
- Development of the Interstate highway system
- Rise in environmental protection issues
- Strategic decisions on military bases and personnel

In addition there were a number of other policies which were not touched upon in the text which stimulated change in the study areas and elsewhere. Among these are the changes in banking regulations that occurred during the period of interest. The number of commercial banks decreased once Federal regulations in the area of mergers and acquisitions were loosened. Nationwide banking grew with banks taking over other banks within and outside of their home states. Computer links also helped to break down geographic barriers to the growth of nationwide banking. Commercial banks play a significant role in financing industrial and commercial enterprises, real estate transactions, and consumer loans. The trend has been towards consolidation of banking and away from banks with local roots.

Other types of changes occurred during the study's period of interest which were not captured in the text. Some of these changes were reflected in Federal legislation; others were not. Among these are the changes in technology (e.g., introduction of television and broadcasting, computers and the Internet), telecommunications (e.g., increased access to landline and cellular telephones), and transportation (e.g., the automobile and commercial air travel). All of these served to bring the world closer to home. At the same time, the world's horizons broadened with space exploration. And, world borders changed. Societal changes included social and political activism among minority groups (e.g., Native Americans, as well as blacks, Hispanics, and gays and lesbians).

The Mid-1980's Decline in OCS Activity Resulted in Changes. The decline in OCS activities, referred to as the "bust," in oil and gas activity in the mid-1980's brought change to the economies and to individuals most directly affected by the offshore oil and gas industry -- most clearly in Lafourche and Terrebonne parishes and to a lesser extent, San Patricio County. The changes are seen in the county-level statistics and in the personal stories told by individuals who lived through the decline years and are still living in the study areas. The changes can also be seen within the industry itself.

The statistics give one set of dates for the bust. Individuals give differing dates, perhaps reflecting the fact that the decline affected different sectors at different time. Both the statistics and the personal stories confirm there was a decline. The bust is a marker in time -- things are dated or measured in terms of before and after the decline.

OCS oil and gas activities have been important to the social and economic characteristics of the Gulf of Mexico study areas. The level of importance, however, has considerably varied over time and with respect to each of the five study counties or parishes. The available information supports four different patterns for Lafourche and Terrebonne parishes, and San Patricio County: (1) 1969 to 1974 -- substantial expansion in economic activity; (2) 1974 to 1981-- sustained economic growth, with economic activity being even higher than it was between 1969 and 1974; (3) 1981 to 1987 -- large contraction or downturn in economic activity frequently referred to as the "bust" years; and (4) for all study areas 1987 to 1995 -- recovery from the bust period and modest economic growth.

For Mobile and Baldwin counties, there were different patterns. Growth slowed in Mobile County between 1981 and 1987, but never stopped or reversed itself. While Baldwin County experienced some slower growth in the "boom" times of 1974 to 1981, it has generally enjoyed robust growth since 1965.

The statistical analysis showed that although OCS oil and gas activities have affected the social and economic structures of Lafourche and Terrebonne parishes and San Patricio County, the effects have been highly erratic, varying, and unstable. Moreover, the effects have been mostly transitory or changing over time. Events affecting OCS oil and gas activities in one year and subsequently the social and economic characteristics have typically lasted for only up to 7 years. The economies of the study areas have become more diversified over time.

The consensus among the individuals interviewed for this study is that the bust was sudden, and for many devastating. In South Louisiana, unemployment rose. Workers left. The out migration was, however, not viewed as all bad by those who stayed, those with limited opportunities elsewhere or strong ties to the area. Those who stayed found ways to make a living, although not like the days when oil and gas jobs were at their prime.

The oil and gas industry started to pick up again in the 1990's. The industry was not quite what it had been. Between the mid-1980's and the 1990's, the industry had undergone some changes. The industry still demanded a large labor force of skilled and unskilled workers, but like many other industries, was operating with a reduced labor force. Where experience had once been sufficient for an oil job, formal education was now required. Federal employment laws and regulations resulted in human resource managers being hired in larger companies to handle the reporting and other requirements of laws and regulations. There was a consolidation of companies.

In the interim, the residents had also changed. The once resident labor force had left when oil declined and had neither returned nor not been replaced by the time the industry rebounded. Remaining local residents reacted in several ways to the opportunities in the oil industry. For many, there was a reluctance to rejoin an industry which had more than amply demonstrated it lacked job security. They had found alternative, more stable employment and were more interested in maintaining that job security than grabbing the financial rewards of the oil industry. For others, there was a cautious reentry over time. Finally, there were those who jumped in wanting to enjoy the financial rewards while they lasted. Overall, the expectation was that the industry would experience a downturn again. (Time proved them correct. Since the field work was completed in June 1998, the industry has experienced a downturn and another resurgence.)

In the interim between the bust and the rebound, the next generation of mariners was not trained. There was a reluctance of some parents to encourage their children to enter marine

occupations. The study area communities faced the common problem of communities with limited job opportunities -- how to keep the youth in school and provide job opportunities locally for an educated workforce. Where the oil industry is a major presence, as in Lafourche and Terrebonne parishes, it can influence the skills taught and the career path chosen. In areas with greater diversification, such as Coastal Bend, Tex. or Mobile Bay, Ala. the focus in education is less on OCS.

Leisure/Tourism/Retirees Economies Incompatible with OCS Oil and Gas Activity. The transition to new economies, as seen in leisure/tourism/retirees, may be fundamentally incompatible with OCS oil and gas activity. Areas with leisure/tourism/retiree and oil and gas economies are all dependent upon natural resources, but in different ways. Oil and gas activities are dependent upon an extractive and nonrenewable natural resource and are industrial activities. Tourism can be based on nonconsumptive use of natural resources even as tourists consume oil to get to their destination. Natural resources also serve as amenity resources of scenic beauty or outdoor recreation which attract residents whose income generally originates elsewhere (e.g., retirees). When the industrial activities of offshore oil and gas occur in proximity to the activities of leisure/tourism/retirees, natural endowments meet quality-of-life factors and conflicts can arise. The leisure landscape story of south Baldwin County told in this study is an example of these conflicts. Concerns about the visual impacts of rigs, the negative impacts on tourism, concerns of oil spills and inadequate public services to deal with spills all surfaced in the stories told about the oil industry and the leisure world of south Baldwin County. The recreational fishing sector which serves the same area acknowledged, however, the benefit of the presence of offshore platforms as rigs or reefs which act as fish aggregators. Damage to the potential amenity value and attractiveness of an area is not limited to offshore oil and gas. Power (1996) noted this in connection with Western mining centers.

The expansion of leisure time, the rise of leisure/tourism/retiree economies, and the separation of work and leisure are other examples of societal change which occurred during the study's period of interest. These resulted from a variety of factors including a decline in the hours of the work week; institutionalization of vacation; a demographic shift in the country to a larger proportion of older Americans and a larger proportion living years in retirement; and increased disposable income following World War II.

Retirement came to have new characteristics during the study's period of interest. Longer life expectancy and changing birthrates increased the number of expected retirement years. Geographic areas with good weather, reasonable living costs, and other desirable quality of life factors drew scores of retirees. Local economies in some places became highly dependent on retirees, either as in-migrant residents, part-time residents, or visitors. Retirement migration to small towns in non-metropolitan counties with amenity resources began in the 1960's. More recently, retirement has come to be seen as a two-phase period. The early years, when retirees are younger and more healthy, are active years spent

travelling, engaging in sports, and volunteer activities. In later years, when health declines and with perhaps the death of a spouse, older retirees frequently move back to their home town or to a town closer to their children. The United States is on the brink of a whole new generation of retirees, the baby boomers born between 1946 and 1964 and pre-boomers born between 1941 and 1945, who have redefined every age group they have reached and have lived through years of national prosperity. This group is expected to redefine retirement and old age. It is also a group that was coming of age as environmentalism and energy conservation became national issues in the late 1960' and 1970's.

In addition to increased leisure through retirement, leisure is increasing through the blurring of the line between work and leisure. Conventions combine work and pleasure with a mixture of meetings and golf and tennis. (Mobile actively promotes its convention center and the attractiveness of the surrounding area.) Technology now allows workers to stay connected to the office through laptops, Internet, and cellular telephones virtually anywhere including while on vacation. Technology and overnight delivery services allow some companies to locate in amenity rich areas and still conduct business as usual.

Conflicts arising from the juxtaposition of the natural resource of oil and gas with amenity resources have surfaced in studies of offshore oil and gas in California. Tourism and retirees were identified as important elements in the economies of Santa Barbara and San Luis Obispo counties and contributing to local opposition to oil development (Paulsen et al., 1996 and Nevarez et al., 1996). Freudenberg and Gramling (1993 and 1994) contrast the hostile reception of potential oil and gas development in northern California with the industry's acceptance in southern Louisiana. The differences in response are attributed to historical factors, biophysical characteristics, and social factors.

Oil and Gas Industry is Complex. The statistical analysis and the personal stories told by individuals revealed many characteristics of the oil and gas industry:

- The industry is international in scope. At the beginning of the period of interest of this study, the offshore oil and gas industry was in its earliest stages, locally emerging in the Gulf of Mexico. Since then the industry has grown to be international in scope, both in terms of companies involved in offshore oil and gas activities, and in terms of places where offshore oil and gas are produced. Companies in the Gulf of Mexico helped make that possible by providing the technology, the services, and the equipment, and in some cases the labor, needed for offshore oil and gas activities. Residents of South Louisiana helped develop offshore resources elsewhere by training workers in the early days of North Sea oil and gas development. The global nature of the industry also means that global events can be felt locally.

- Technology has transformed the industry multiple times. Techniques and equipment for drilling over water have evolved greatly during this study's period of interest.

Exploratory drilling rigs -- drilling barges, jack-up rigs, semisubmersibles, and drillships -- were designed over a period of years to meet industry needs as it moved offshore. Early platforms made of wood and placed in water less than 100 feet in depth have been replaced by a number of development system types (e.g., fixed platform, compliant tower, floating production systems, tension leg platform, and SPAR platform) for use in deep water (greater than 1,000 feet). Transportation systems have also had to keep up with development activity moving further offshore. The latest technology can be incorporated into the design of each new development project. Changes have also occurred in the use of people. Where experience or being able-bodied was once sufficient for a job with the industry, formal training is now required.

- The offshore oil and gas industry operates within the larger context of business and industry and, therefore, is not immune to all trends seen in the larger business world. Some of the more obvious business trends seen in the oil and gas industry include consolidation of companies, use of contract workers, discussion of unionization in fields previously not associated with unions, and use of human resource managers to handle Federal employment laws and regulations.

  In addition, the Federal policy downsizing the military has affected the transportation sector serving the oil and gas industry by helicopters. With the downsizing of the military and the pilots trained during the Vietnam War era nearing or reaching retirement, those companies that have traditionally hired former military pilots and airplane maintenance technicians (the helicopter companies and airlines) are facing a shortage of trained personnel. These companies are having to establish training programs, where previously they relied on the military to train those who eventually became their pilots and maintenance technicians.

- The oil and gas industry brings uncertainty. It is an extractive industry of a non-renewable resource. So, by its nature there is uncertainty. Oil and gas activities occur in a series of stages -- exploration (including geophysical surveying), development, production, and abandonment. Development projects depend on successful surveying and exploration programs. Discoveries of oil or gas reserves do not always result in production projects. Each stage has distinctive features and a differing labor skill mix. The same stage can re-occur and two or more stages can occur contemporaneously when specific projects overlap. The industry is influenced by price, interest rates, and regulations. Oil prices in more recent times are set by complex geopolitical dealings.

- The industry can be an agent of change. As seen in the study areas, where the oil and gas industry was a major force, the industry greatly influenced the formal education

system, choices for the path from school to work, and choices in how to make a living. It also influenced population, business, and economic growth and decline.

- Neither the industry nor its impacts are monolithic. The oil and gas industry is really an umbrella term to capture companies which undertake offshore exploration, development, or production, provide oil and gas transportation and storage, provide oil and gas processing, and provide the many support services and facilities, such as crew bases, platform fabrication yards, and pipe coating yards.

As seen across and within the study areas, the impacts from the offshore oil and gas industry varied. In South Louisiana and Coastal Bend, Tex., impacts showed in the statistical analysis and in the personal stories told by individuals. Within the South Louisiana study area, the area closest to the coast experienced greater impacts than more inland communities. In Mobile Bay, where offshore gas is a relative new comer, impacts were less noticeable. These findings suggest several things. The extent of OCS impacts can be predicted in part by the physical and sociocultural isolation of an area and the capacity of an area to respond to OCS oil and gas industry needs -- skills of the workforce, infrastructure, geography -- and economic diversification. It also suggests that close proximity to offshore oil and gas activities does not necessarily result in benefits or negative impacts.

The characteristics of the offshore oil and gas industry which surfaced in this study support the observations and findings of previous studies on the industry in the GOM and elsewhere. Some studies have focused on the characteristics of the industry and its workers. For example, support services are supplied through short-term contracts with independent enterprises (Harris et al., 1988). Onshore employees were found to more likely reside in staging area locations than are offshore platform workers (Centaur Associates, Inc., 1986 and Applied Technology Research Corporation, 1994). The employment multiplier effects of the industry further document that industry impacts are not monolithic (Centaur Associates, Inc., 1986 and Abington et al., 1993). Oil discovery, production, and support involve a wide range of occupational specializations. Occupational specialization that accompanies development of extractive industries can lead to difficulties adjusting to downturns in employment in those industries (Gramling, 1996; Freundenburg and Gramling, 1994). Another example of occupational specialization related to the oil industry occurred in Newfoundland where new hires and retraining of existing workers to provide increasing skill was required to complete 227,000 person days of design engineering work for the local offshore oil industry (Shrimpton and Storey, 1996). Increasing skills and capabilities of local firms was viewed as beneficial to the area.

Studies about the impacts of the offshore oil and gas industry also show effects on other aspects of life. Demand for labor in oil activities has created shortages in agriculture and opened up niches to others (e.g., women in chile packing operations as men were drawn to oil jobs) (Schweid, 1980). The nature of the unique work structure of offshore workers, with

extended periods of time on the offshore work site followed by extended periods on shore has been the focus of a number of studies. For example, a study in Newfoundland characterized the attitudes of men and women about offshore oil work and its effects on family life as ambivalent (Lewis et al., 1988). While attitudes and coping skills were not a focus of the current study, studies on the impact of the industry on workers and their families further illustrate the complexities that accompany the industry.

8.3 Methodological Findings and Conclusions

By design, a secondary objective of the project was to enhance the understanding of the study of offshore oil and gas impacts through the use of the analytical approaches of history, anthropology, and economics and integration of the results of these analyses. The following are the methodological findings and conclusions.

Contribution of three disciplines. This study demonstrated that the analytical approaches of history, anthropology, and economics are useful in identifying and explaining impacts of offshore oil and gas on coastal communities. The rapid assessment used by ethnographers relies heavily on personal interviews. The interviews often reveal insights not available elsewhere. However, without the benefit of a sampling plan and questionnaire authorized by the Office of Management and Budget, the findings can not be generalized to a larger population.

The statistical analysis reveals trends in the economy and characteristics of the population. Data limitations are a restricting factor. Needed data are not always readily available for the time periods needed or at the subcounty level where impacts more often occur. As a result, the statistical analysis can not be as focused as the many impacts of interest. The use of history helps interpret and explain trends and determine their relationship to offshore oil and gas activity. The analytical approaches of each of the three disciplines resulted in new insights on the impacts of offshore oil and gas activities. The integration of the findings of the three disciplines, however, provided an added dimension to understanding offshore oil and gas impacts on counties, communities, households, and individuals.

Alternative approach to using the three disciplines. The methodological approach used in this study did enhance the understanding of the impacts of oil and gas activities. However, alternative approaches still need to be investigated as part of the ongoing search to understand how, when, and where impacts occur. The approach of this study may not, in the end, be the optimal approach. Alternative uses of the three disciplines need to be explored. Figure 8-1 (at the end of the section) outlines another approach which uses anthropology, economics, and history to understand or explain the impacts of offshore oil and gas. This alternative approach starts with a rapid assessment of issues (either issues provided by MMS or uncovered in the assessment) and determination of which oil industry sectors are located locally. A statistical analysis of the economy would then be undertaken. Since, as this study

demonstrated both in the statistical analysis and in the field work, the insights are in the detail, detailed data would be used for the local oil industry sectors and more aggregate data used for the other sectors. The issues and the results of the statistical analysis would then be given to the historian to provide meaning and contextualization of the results. Finally, to validate the findings with local knowledge, the results of the three steps could, if warranted, be presented and discussed in a focus group from the county/community of interest.

The study findings also lead to suggestions for promising future research. This include:

- Validation of the results of the statistical analysis using other counties
- Further work with the cluster analysis results or concept to gain understanding of response of like counties to the offshore oil industry
- Study of economic diversification and types of impacts experienced
- Study of technological and structural changes of the offshore oil industry
- Study of the contribution of state government and political structure in understanding impacts; in particular a comparison of Texas, Louisiana, California, and perhaps Oklahoma
- Study of impacts of the offshore oil and gas industry on institutions
- Study of ethnicity within coastal communities and relationship of ethnic groups to the industry
- Study of the response of counties/communities providing different types of oil industry services (e.g., administration, transportation, processing, support services, fabrication) to the industry
- Further examination of impacts from military presence and base closings compared to those from the oil and gas industry
- Examination of escalating pressure for education to serve global economic competitiveness on communities, households, families, and individuals
- Comparative analysis of the impacts from offshore oil and gas, timber, and textiles

In the end, there is still much to learn about the timing, magnitude, and location of OCS impacts on coastal communities and the households, families, and individuals who reside there.

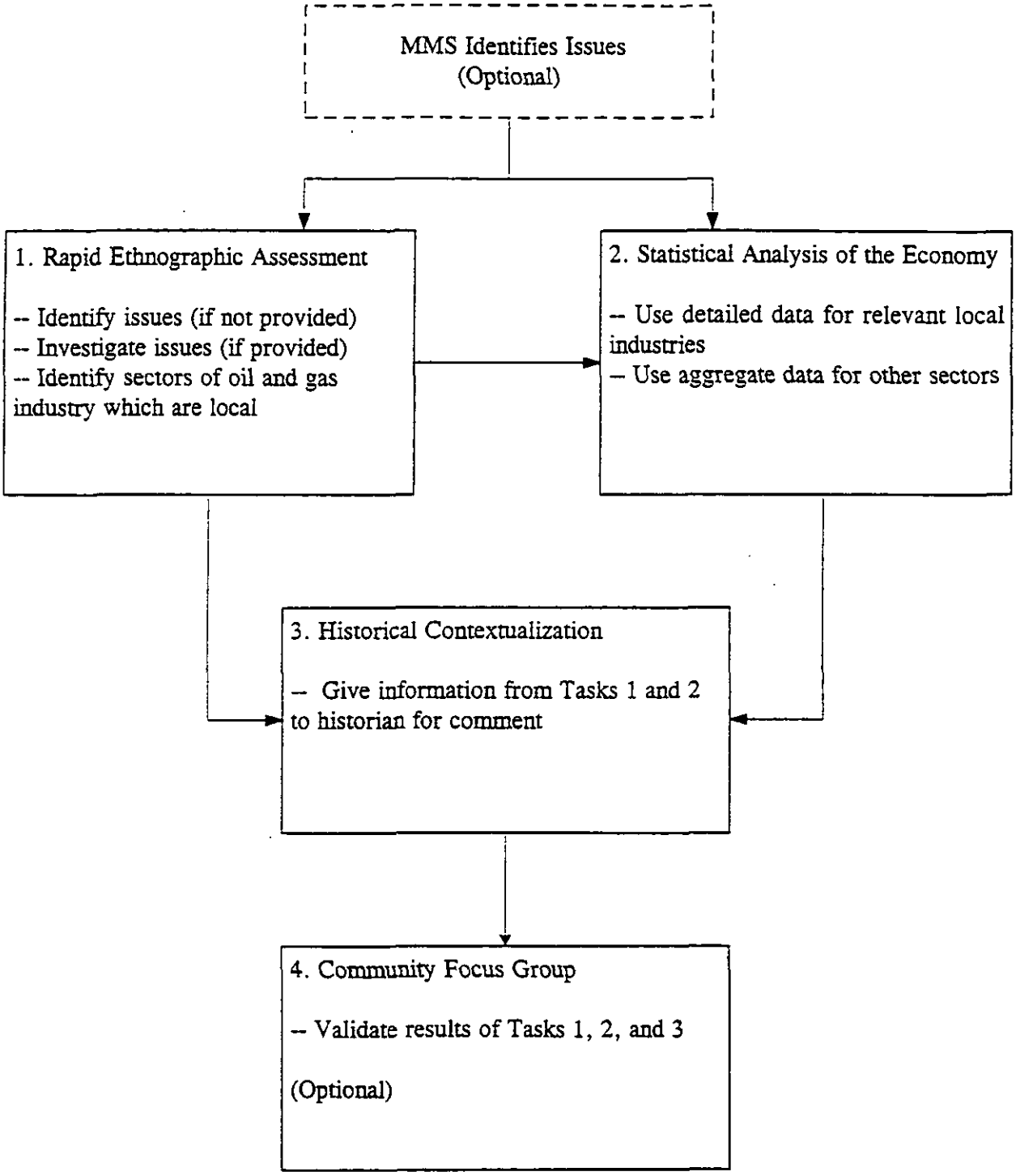


Figure 8-1. Alternative methodological approach.

References Cited

Abington, O., H. Bullamore, and D. Johnson. 1993. Louisiana: a geography. Lafayette: Department of Geography/Urban and Regional Planning, University of Southwestern Louisiana. Xii, 168 pp.

Adkins, G. 1972. A study of the blue crab fishery in Louisiana. Louisiana Wildlife and Fisheries Commission, Division of Oysters, Water Bottoms and Seafoods, New Orleans Technical Bulletin no. 3. 57 pp.

Alabama Department of Conservation and Natural Resources. 1998. 1998 Alabama marine information calendar. Alabama Department of Conservation and Natural Resources, Marine Resources Division, Gulf Shores, Ala. 28 pp.

Alabama Department of Economic and Community Affairs (ADECA). 1998. Alabama coastal area management plan. Draft. Daphne, Ala. Coastal Programs Office, Science, Technology, and Energy Division. 85 pp.

Alabama Department of Environmental Management (ADEM). 1995. Administrative Code. Alabama Department of Environmental Management, Division 8, Coastal Program. ADEM, Montgomery, Ala. 50 pp.

Alabama Gulf Coast Chamber of Commerce. n.d. Economic indicators. Gulf Shores, Ala.: Alabama Gulf Coast Chamber of Commerce. 28 pp.

Alabama Gulf Coast Convention and Visitors Bureau. 1998. Economic update. Gulf Shores, Ala.: Alabama Gulf Coast Convention and Visitors Bureau. 7 pp.

Allen, W. and S.H. Taylor. 1997. Aransas Pass: the life of a Texas coastal county. Austin, Tex.: Eakin Press. 478 pp.

Amos, H.E. 1985. Cotton city: urban development in antebellum mobile. Ala.: University of Alabama Press. 311 pp.

Anderson, J.D. 1988. The education of blacks in the south, 1860-1935. Chapel Hill: UNC Press. 366 pp.

Applied Technology Research Corporation. 1994. Louisiana, Gulf of Mexico Outer Continental Shelf offshore oil and gas activity. Baton Rouge: Louisiana Mid-Continent Oil and Gas Association. 56 pp.

Arizona Daily Star. 1999. "Texas drought continues." March 12. P. A12.

Associated Press. 1996. Oil's "dead sea" finding sudden revival. *The Sunday Advertiser*, Jan. 7, E1.

Atherton, L. 1961. The cattle kings. Bloomington: Indiana University Press. 308 pp.

Austin American. August 29, 1947.

Austin Statesman. October 18, 1947.

Bailey, J.C. 1971. Seaman A. Knapp: schoolmaster of American agriculture. New York: Columbia. 307 pp.

Bailey, K.K. 1964. Southern white protestantism in the twentieth century. New York: Smith Peter. 180 pp.

Bailey, T.E., ed. 1995. Learning to work: employer involvement in school-to-work transition programs. Washington, DC.: The Brookings Institution. ix, 104 pp.

Baker, R.D. 1983. Sawdust empire: the Texas Lumber industry, 1830-1940. College Station: Texas A&M University Press. Xv, 228 pp.

Baldwin Register. 1998. "Plenty of jobs, but pay's low." January 25. pp. 1, 14.

Baldwin Times. 1983. "Revival." March 9. p. 1.

Banerjee, A., J. Dolado, J.W. Galbraith, and D.F. Hendry. 1993. Co-integration, error-correction, and the econometric analysis of non-stationary data. Oxford: Oxford University Press. 329 pp.

Barlow, M. 1992. 1917-1992: A vocational education era. *Vocational Education Journal* 67 (2, February):30-32.

Bartley, N. V. 1995. The new South, 1945-1980: the story of the South's modernization. Baton Rouge: Louisiana State University Press. xiii, 548 pp.

Beaulieu, L. J. and D. Mulkey, eds. 1995. Investing in people: the human capital needs of rural America. Boulder, Colo.: Westview Press. xiv, 383 pp.

Becnel, T.A. 1980. Labor, church, and the sugar establishment, 1887-1976. Baton Rouge: Louisiana State University Press. 222 pp.

Becnel, T.A. 1989. The Barrow family and the Barataria and Lafourche canal: the transportation revolution in Louisiana, 1829-1925. Baton Rouge: Louisiana State University Press. 202 pp.

Becnel, T.A. 1995. Senator Allen Ellender of Louisiana: a biography. Baton Rouge: Louisiana State University Press. 300 pp.

Bennett, M. J. 1996. When dreams came true: the GI Bill and the making of modern America. Washington, DC.: Brassey's. 335 pp.

Bernard, R. M. and Rice R.R., eds. 1983. Sunbelt cities: politics and growth since World War II. Austin: University of Texas Press. X, 346 pp.

Biles, R. 1990. The urban South in the great depression. *Journal of Southern History* 56(February):71-100.

Birmingham News. 1979. "Will Uncle Sam grab Gulf Shores." October 28. pp. 1-A. 8-A.

Biro, E. 1991. Easy pickings lure more watermen into blue crabs. *National Fisherman* 72 (6): 27-29.

Bishop State Community College. 1998. 1998-2000 general catalog. Bishop State Community College, Mobile, Ala. 103 pp.

Bishop State Community College Registrar. 1998. Oral communication.

Bohi, D.R. 1984. Energy security in the 1980s: economic and political perspectives. Washington, DC: Brookings Institute. 51 pp.

Boles, J.B. 1995. The South through time: a history of an American region. Englewood Cliffs, NJ: Prentice Hall. Xiv, 569 pp.

Bond, H.M. 1969. Negro education in Alabama: a study in cotton and steel. New York: Octagon Books. 358 pp.

Bonkemeyer, P.H., ed. 1984. Once upon an island...as told to and collected by the Gulf Shores Woman's Club. Foley, Ala.: Underwood Printing Company, Inc. 115 pp.

Bortz, J. 1992. The effects of Mexico's postwar industrialization on the U.S.-Mexico price and wage comparison. In *U.S.-Mexico relations: labor market interdependence*, edited by Jorge A. Bustamonte, Clark Winton Reynolds and Raul Andres Hinojosa-Ojeda. Stanford, Calif.: Stanford University Press. pp. 214-234.

Bourgeois, H. L. 1938. Four decades of public education in Terrebonne Parish. M.A. thesis, Louisiana State University, Baton Rouge. iv, 86 pp.

Bowman, G. and J. Curry-Roper. 1982. The Houma people of Louisiana: a story of Indian survival. Mennonite Central Committee, Akron, Pa., Extract from the petition of the United Houma Nation for federal acknowledgment as an American Indian tribe. 97 pp.

Brabant, S. 1984. Education in the coastal zone parishes. In *The role of outer continental shelf oil and gas activities in the growth and modification of Louisiana's coastal zone*, edited by Robert B. Gramling and Sarah Brabant. U.S. Department of Commerce, National Oceanic and Atmospheric Administration, Washington, DC. 135-164 pp.

Brasseaux, C.A. 1989. Four hundred years of Arcadian life in North America. *Journal of Popular Culture* 23 (1): 3-22.

Brown, R., J. Durbin and J. Evans. 1975. Techniques for testing the constancy of regression relationships over time. *Journal of the Royal Statistical Society*, Series B, 37, pp. 149-172.

Brundage, W.F. 1993. Lynching in the New South: Georgia and Virginia, 1880-1930. Urbana, Ill.: University of Illinois Press. 375 pp.

Bullard, R.D. 1994. Dumping in Dixie: race, class, and environmental quality. Boulder, Colo.: Westview Press. Xx, 195 pp.

Burrows, G. and R. Shlomowitz.1992. The lag in the mechanization of the sugarcane harvest: some comparative perspectives. Agricultural History 66 (3): 61-75.

Butler, J.T., Jr. 1973. Prisoner of war labor in the sugar cane fields of Lafourche Parish, Louisiana: 1943-1944. *Louisiana History* 14:283-296.

Buttel, F.H. 1996. Environmental and resource sociology: theoretical issues and opportunities for synthesis. *Rural Sociology* 61(1):56-76.

Calvert, R. A. and A. De Leon. 1990. *The History of Texas*. Arlington Heights, Ill.: Harlan Davidson. 481 pp.

Capone, V.J. 1986. Brown shrimp catch in Louisiana's wing-net fishery: effects of moon phase, time of day, current and effort. M.S. thesis, Department of Marine Sciences, Louisiana State University, Baton Rouge.

Carlson, P.H. 1982. Texas woollybacks: the Texas sheep and goat industry. College Station: Texas A&M University Press. 256 pp.

Carroll, P.J. 1990. Tejano living and educational conditions in World War II South Texas. *Journal of Texas* 3:82-103.

Catton, W.R., Jr. and R.E. Dunlap. 1978. Environmental sociology: a new paradigm. *The American Sociologist* 13:41-49.

Centaur Associates, Inc. 1986. Indicators of the direct economic impacts due to oil and gas development in the Gulf of Mexico. Prepared for the Minerals Management Service, Gulf of Mexico Region. Washington, DC. 2 volumes.

Chalmers, D.M. 1981 (1965). Hooded Americanism: the history of the Ku Klux Klan. New York: Franklin Watts. 477 pp.

Chamberlain, G. 1982. The General Equivalence of Granger and Sims Causality. *Econometrica*. 50:569-582.

Cherney, P.R. 1995. Civic index review: milestones in community development, Mobile, Alabama 1960-1994.

Childers, H. 1997. Flipping the BRD: gulf shrimpers say a bycatch law is all wet. *National Fisherman* 77 (10): 16-18.

City of Mathis. 1987. City of Mathis, Texas. Supplement to the Homeport EIS, Ingleside Public Library.

Clarion Ledger, The. 1983. "The whole world is discovering Gulf Shores, Ala" May 15. (No page given.)

Clark, D.A. 1998. "The two joes meet - joe college, joe veteran": the G.I. bill, college education, and postwar American culture. *History of education quarterly* 38 (2, Summer):165-189.

Clayton, B. 1992. W.J. Cash: a mind of the South. In *W. J. Cash and the minds of the South*, edited by Paul D. Escott. Baton Rouge: Louisiana State University Press. pp. vi, 267.

Clement, R. J. 1970. Charles Calvert Elkins, President-Emeritus, Francis T. Nicholls State College. Research paper, Education. Baton Rouge: Louisiana State University. 20 pp.

Clinchy, E.R. 1974. Equality of opportunity for Latin-Americans in Texas. New York: Arno Press.

Cobb, B.F. 1970. The fisheries view. *Texas marine resources*. Aug.:5-7.

Cobb, J.C. 1982. The selling of the south: the southern crusade for industrial development, 1936-1980. Baton Rouge: Louisiana State University Press. 293 pp.

Cook, B.A. and J.R. Watson. 1985. Louisiana labor: from slavery to "right-to-work." Lanham, MD: University Press of America. 301 pp.

Corpus Christi Caller-Times. 1957. "Discrimination suit against Mathis ended." (Article found in the Dr. Hector P. Garcia Papers, Special Collections and Archives, Texas A&M University-Corpus Christi Bell Library.)

Corpus Christi Caller-Times. 1957. "Mathis school board gives up prejudice struggle." (Article found in the Dr. Hector P. Garcia Papers, Special Collections and Archives, Texas A&M University-Corpus Christi Bell Library.)

Corpus Christi Caller-Times. 1980. "Mathis superintendent retires after long service." December 14. p. B2.

Corpus Christi Caller-Times. 1993. Time line. June 25. Supplement.

Corpus Christi Caller-Times. 1992. "$55 million residential-business project planned for Ingleside." April 23. p. A1, A12.

Couch, R. F. 1964. The Ingalls story in Mississippi, 1938-1958. *Journal of Mississippi History* 26: 192-206.

Craig, D. 1990. Social impact assessment: politically oriented approaches and applications. *Environmental Impact Assessment* 10:37-54.

Cranswick, D. and J. Regg. 1997. Deepwater in the Gulf of Mexico: America's new frontier. U.S. Department of the Interior, Minerals Management Service, Gulf of Mexico OCS Region, New Orleans. Contract no. MMS-97-0004.

Curry, J. 1979. A history of the Houma Indians and their story of federal nonrecognition. *American Indian Journal* 5 (2): 8-28.

Dallas Morning News. June 25, 1949.

Daniel, P. 1985. Breaking the land: the transformation of cotton, tobacco, and rice cultures since 1880. Urbana, Ill.: University of Illinois Press. 368 pp.

Daniel, P. 1990. Going among strangers: Southern reactions to World War II. *Journal of American History* 77(December):886-911.

Dardia, M., K.F. McCarthy, R.F. Schoeni, and G.Vernez. 1996. The effects of military base closures on local communities: a short-term perspective. Rand Corporation. (MR-667-OSD). Xiii, 59 pp.

Dauphine, J.G. 1993. A question of inheritance: religion, education, and Louisiana's cultural boundary, 1880-1940. Lafayette: The Center for Louisiana Studies, University of Southwestern Louisiana. 180 pp.

Davis, D.W., and J.L. Place. 1983. Oil and gas industry of coastal Louisiana and its effect on land use and socioeconomic patterns. U.S. Department of the Interior, U.S. Geological Survey, Reston, VA Open File Report 83-118. 71 pp.

Davis, D.W. 1988. Effects of the decline on higher institutions of learning. Paper read at Ninth annual Gulf of Mexico Information Transfer Meeting, December, at New Orleans, Louisiana. U.S. Department of the Interior, Minerals Management Service, Gulf of Mexico OCS Region. pp. 362-366.

Davis, D.W. 1993. People and resources within the Barataria-Terrebonne national estuary. *Coastal Zone '93* 1: 678-693.

Dethloff, H.C. 1970. Rice revolution in the Southwest, 1880-1910. *Arkansas Historical Quarterly*, 29(Spring):66-68.

DeVore, D.E., and J. Logsdon. 1991. Crescent City schools: public education in New Orleans 1841-1991. New Orleans, La.: Orleans Parish School Board. 402 pp.

Dickey, D.A. and W.A. Fuller. 1981. The likelihood ratio statistics for autoregressive time series with a unit root. *Econometrica*, Vol. 49, pp. 1057-1072.

Doan, T.A. 1996. RATS user's manual, version 4. Evanston, Ill.: Estima.

Dos Passos, J. 1944. State of the nation. Boston: Houghton Mifflin. 333 pp.

Drilling. February 1952. pp. 74-78.

Durrenberger, E. P. 1988. Shrimpers and turtles on the gulf coast: the formation of fisheries policy in the United States. *Maritime Anthropological Studies (MAST)* 1 (2): 196-214.

Durrenberger, E. P. 1990. Policy, power, and science: the implementation of turtle excluder device regulations in the U.S. Gulf of Mexico shrimp fishery. *Maritime Anthropological Studies (MAST)* 1 (2): 196-214.

Durrenberger, E. P. 1992. It's all politics: south Alabama's seafood industry. Urbana and Chicago: University of Illinois Press. xvi, 216 pp.

Durrenberger, E. P. 1996. Gulf coast soundings: people & policy in the Mississippi shrimp industry. Lawrence: University Press of Kansas. 170 pp.

Eberson, F. 1980. Eradication of hookworm disease in Florida. *Journal of the Florida Medical Association* 67(Aug.).

Eddins, D. 1997. AEA: head of the class in Alabama politics. Montgomery: Alabama Education Association. 402 pp.

Edison Chouest Offshore (ECO). n.d. Company prospectus.

Energy Information Administration. 1997. Annual energy review.

Energy Information Administration. 1998. Monthly energy review. DOE/EIA 0835 (98/11).

Engine News Staff. 1978. Cheramie success story offers tribute to hard work. *Engine News* 6 (1): 18-21.

Engle, R.F. and C.W.J. Granger. 1987. Co-integration and error correction: representation, estimation, and testing. *Econometrica* 55: 251-276.

Evans-Klages, Inc. 1998. 1996 visitor profile. Tampa, Fla. Prepared for the Alabama Gulf Coast Convention and Visitors Bureau. Gulf Shores/Orange Beach, Ala. 6 pp.

Falk, W. W. and T.A. Lyson. 1988. High tech, low tech, no tech: recent industrial and occupational change in the south. Albany: SUNY Press. 181 pp.

Faulkner, G. 1995. Ending a gear war: how not to mix shrimp nets and crab traps. *National Fisherman* 765 (6): 54-55.

Faulkner, G. 1996. How about a TED-less beam trawl? *National Fisherman* 76 (12): 60-61.

First National Bank of Mobile. 1940. Highlights of 75 years in Mobile. Mobile, AL: First National Bank of Mobile. 118 pp.

Fite, G.C. 1984. Cotton fields no more: southern agriculture, 1865-1980. Lexington: University Press of Kentucky. 273 pp.

Flynt, W. 1994. Part three: from the 1920s to the 1990s. In *Alabama: the history of a deep South state*, edited by Robert David Ward William Warren Rogers, Leah Rawls Atkins, and Wayne Flynt. Tuscaloosa: University of Alabama Press. pp. 411-622.

Foley, A.S. 1981. Mobile, Alabama: the demise of state sanctioned resistance. In *Community politics and educational change*, edited by Charles V. Willie and Susan L. Greenblatt. New York: Longman. pp. 174-207.

Foote, J. M. and M Robertson. 1926. The public schools of East Feliciana Parish. Baton Rouge: Louisiana State Department of Education.

Freudenburg, W.R. 1992. Addictive economies: extractive industries and vulnerable localities in a changing worl economy. *Rural Sociology* 57(3):305-332.

Freudenburg, W.R. and R.B. Gramling. 1993. Socioenvironmental factors and development policy: understanding opposition and support for offshore oil. *Sociological Forum* 8(No. 3): 341-364.

Freudenburg, W.R. and R.B. Gramling. 1994. Oil in troubled waters: perceptions, politics, and the battle over offshore drilling. Edited by David W. Orr and Harlan Wilson, *SUNY Series in Environmental Public Policy*. Albany: State University of New York Press. xv, 179 pp.

Fritchey, R.. 1993. Wetland riders. New Orleans: New Moon Press. 393 pp.

Fritchey, R. 1996. Net income. *Louisiana Life* 16(Autumn):54-61.

Furlow, W. 1998. "Pit-stop" convenience designed for deepwater supply. *Offshore* (June):113-114.

Gannon, M. (ed.). 1996. The new history of Florida. Gainesville: University Press of Florida. Xvi, 480 pp.

Garcia, H. P. 1948. Preliminary report on Mathis, Texas; Labor camp investigation and report. Copy on file, box 154, folder 2, Hector P. Garcia Papers, Special Collections, Bell Library, Texas A&M University-Corpus Christi.

Garcia, H.P. 1958. Letter to James Mitchell. Copy on file, Hector P. Garcia Papers, Special Collections, Bell Library, Texas A&M University-Corpus Christi.

Gold, R.L. 1985. Ranching, mining, and the human impact of natural resource development. New Brunswick, N.J.: Transaction, Inc. x, 175 pp.

Goldfield, D. 1982. Cotton fields and skyscrapers: Southern city and region, 1607-1980. Baton Rouge: Louisiana State University Press. 256 pp.

Goldfield, D. 1987. Promised land: the South since 1945. Arlington Heights, Ill.: Harlan Davidson. 262 pp.

Goldfield, D. 1990. Black, white, and Southern: race relations and Southern culture, 1940 to the present. Baton Rouge: Louisiana State University Press. xviii, 321 pp.

Goldfield, D. 1991. The city as southern history: the past and the promise of tomorrow. In *The future south: a historical perspective for the twenty-first century*, edited by Joe P. Dunn and Howard L. Preston. Urbana: University of Illinois Press. pp. 11-48.

Goldfield, D. 1993. Black political power and public policy in the urban South. In Urban policy in twentieth-century America edited by Arnold R. Hirsch and Raymond A. Mohl. New Brunswick, NJ: Rutgers University Press. pp. 159-82.

Goldstein, J, ed. 1982. The politics of offshore oil. New York: Praeger Publishers. xx, 192 pp.

Goodrich, R.L. 1989. Applied statistical forecasting. Belmont, Mass.: Business Forecast Systems, Inc.

Gordon, W.R., Jr. 1984. The Coastal Barrier Resources Act of 1982: an assessment of legislative intent, process, and exemption alternatives. *Coastal Zone Management Journal* 12 (2/3): 257-286.

Gramling, R. and S. Brabant (eds.). 1984. The role of OCS oil and gas activities in the growth and modification of Louisiana's coastal zone. Prepared by Louisiana Department of Natural Resources University of Southwestern Louisiana for U.S. Department of Commerce, National Oceanic and Atmospheric Administration, Washington, DC. Contract no. NA-83-AA-D-CZ025. xiv, 231 pp.

Gramling, R.B., and T.F. Reilly. 1980. Education in East St. Mary Parish. In *East St. Mary Parish, economic growth and stabilization strategies*, edited by Robert B. Gramling. Baton Rouge: Louisiana Department of Natural Resources. pp. 109-116.

Gramling, R.B. 1995. Oil in the Gulf: past development, future prospects. U.S. Department of the Interior, Minerals Management Service, Gulf of Mexico OCS Region; Louisiana Universities Marine Consortium, University Research Initiative, New Orleans, Louisiana, OCS Study MMS 95-0032. 72 pp.

Gramling, R.B. 1996. Oil on the edge: offshore development, conflict, gridlock. Albany, New York: State University of New York Press. xiv, 208 pp.

Gramling, R.B. and W.R. Freudenburg. 1996. Crude, coppertone, and the coast: development channelization and constraints of alternative development opportunities. *Society and Natural Resources* 9: 483-506.

Granger, C.W.J. 1969. Investigating causal relations by econometric models and cross-spectral methods. *Econometrica*. 37:24-36.

Green, B.G. 1982. The history of the Wainwright liberty ships and tankers. Panama City, Fla.: Bay County Historical Society. iii, 28 pp.

Green, D.L. and P.N. Leiby. 1993. The social costs to the U.S. of monopolization of the world oil market, 1972-1991. Oak Ridge, Tenn.: Oak Ridge National Laboratory. Report Number 6744. 97 pp.

Greene, W.H. 1997. LIMDEP, version 7.0 user's manual. New York, NY.: Econometric Software, Inc.

Griffen, J.M. and H.B. Steele. 1980. Energy Economics and Policy. New York, NY.: Academic Press.

Gunther, J. 1947. Inside U.S.A. New York: Harper. 978 pp.

Guthrie, K. 1986. History of San Patricio county. Austin, TX: Nortex Press. 647 pp.

Hagar, R. 1984. More and more independents plunge offshore. *Oil and Gas Journal* October 22.:98.

Hall, B.H. 1996. Time series processor, version 4.3, user's guide. Palto Alto, Ca.: TSP International.

Hamilton, J.D. 1983. Oil and the macroeconomy since World War II. *Journal of Political Economy*, 91, pp.228-248.

Hamilton, J.D. 1985. Historical causes of postwar oil shocks and resources. *Energy Journal*, 6 pp.97-116.

Hamilton, J.D. 1994. Time series analysis. Princeton, NJ.: Princeton University Press.

Hanley, L.G. 1964. The public school system of Lafourche Parish: 1932 to 1962. Ph.D. dissertation, Education, Louisiana State University, Baton Rouge. 84 pp.

Hansen, H. and K. Juselius. 1998. CATS for Rats. Evanston, Ill.: Estima.

Hansen, J. and S. Johansen. 1993. Recursive estimation in cointegrated VAR-models. Preprint 1993, No. 1, Institute of Mathematical Statistics, University of Copenhagen.

Harbinger. 1992. "Tax exemptions spur Theodore industrial park." October 13-26. p. 7.

Harbinger. 1992. "Mobile attracts industry." October 27-November 9. p. 9.

Harbinger. 1993. "Theodore's explosive dump." July 27-August 9. pp. 1-3.

Harbinger. 1997. "Update on sum-in-lieu." March 25-April 1. p. 1.

Harbinger. 1997. "Editorial: Tax who, tas what, tax how." May 13-26. p. 2.

Harland Bartholomew and Associates (HB&A). 1968. Preliminary reports upon parks and recreation and colleges and universities, Coastal Bend Region, Texas. Prepared by Harland Bartholomew and Associates for Urban Planning Gran Project Tex. P-151, St. Louis, MO. April, 1968.

Harris, A.H., M.G. Lloyd, and D.A. Newlands. 1988. The impact of oil on the Aberdeen economy. Avebury: Brookfield.

Harris, R. 1981. Gulf shores battles back. *Southern World* 3 (May/June):32-35.

Harrison, P.G. 1986. The development of Gulf Shores, Alabama: an interview with Erie Hall Meyer. *Gulf Coast Historical Review* 2 (1): 79-103.

Harvey, A. And G. Collier. 1977. Testing for functional misspecification in regression analysis. *Journal of Econometrics*, 6. pp.103-119.

Harvey, A. and G. Phillips. 1974. A comparison of the power of some tests for heteroscedasticity in the general linear model. *Journal of Econometrics,* 2, pp. 307-316.

Haygood, T.M. 1986. Cows, ticks, and disease: a medical interpretation of the Southern cattle industry. *Journal of Southern History* 52(Nov.)551-64.

Hays, S.P. 1987. Beauty, health, and permanence: environmental politics in the United States, 1955-1985. New York: Cambridge University Press. 630 pp.

HDR Engineering, Inc. 1995. Trans-Texas water program, Corpus Christi study area, phase II report. Vol. 2. HDR Engineering, Inc., Corpus Christi, TX, Technical Report. 600 pp.

Hickman, N.W. 1962. Mississippi harvest: lumbering in the longleaf pine belt, 1840-1915. Oxford, Miss.: University of Mississippi. 306 pp.

Hill, S.S., Jr. 1980. The south and north in American religion. Athens: University of Georgia Press. xvi, 152 pp.

Hirsch, A. 1983. New Orleans: sunbelt in the swamp: In sunbelt cities: politics and growth since World War II, edited by Richard M. Bernard and Bradley R. Rice. Austin: University of Texas Press.

Hirsch, A. 1997. Oral communication.

Hirsch, A.R. and R.A. Mohl (eds.). 1993. Urban policy in twentieth-century America. New Brunswick, NJ: Rutgers University Press. xiii, 238 pp.

Hobby, B. 1999. University of Houston and former Lieutenant Governor of Texas, oral communication, September 9.

Holley, D. 1970. Old and new worlds in the new deal resettlement programs: two Louisiana projects. *Louisiana History* 11: 137-165.

Holman, M.A. 1974. The political economy of the space program. Palo Alto: Pacific Books. xviii, 398 pp.

Hovath, P. 1987. Why the Gulf of Mexico? *Oil and Gas Journal* November 2.:55.

Hyde, S. 1999. Department of History, University of Southeastern Louisiana, oral communication, September.

Ingleside Index. 1992. "Wisconsin company purchases shipyard." October 22. p. 1, 8.

Islander, The. 1985. "ADEM unveils dune setback line." January 10. pp. 1, 6.

Islander, The. 1990. "Former Mayor Norton dies." January 6. p. 1A, 4A.

Islander, The. 1990. "City's first mayor recalls early years." July 25. p.B1, 3.

Islander, The. 1990. "Deflation strikes real-estate values." November 24. pp. 1A, 9A.

Islander, The. 1990. "Dissent surfaces at Gulf meeting." December 8. pp. 12A.

Islander, The. 1992. "Island offers piece of paradise." February 26-27. p. 4G.

Ives, R. and J. Hurley. 1988. United States sugar policy: an analysis. Prepared by U.S. Department of Commerce. International Trade Administration for Government Printing Office, Washington, DC. 105 pp.

Jackson, H.H., III. 1998. Seaside, Florida: Robert Davis and the quest for community. *Atlantic History* 42(Fall):41-51.

Johansen, S. and K. Juselius. 1990. The full information maximum likelihood procedure for inference on cointegration–with applications to the demand for money. *Oxford Bulletin of Economics and Statistics* 52: 169-210.

Johnson, D.G. and M. Matre. 1989. Social participation among blacks and whites in Mobile County, Alabama. Mobile: University of South Alabama. 110 pp.

Juselius, K.1992. Domestic and foreign effects on prices in an open economy. The case of Denmark. *Journal of Policy Modeling* 14(4): 401-428.

Kaplan, B.J. 1983. Houston: The golden buckle of the sunbelt. In *Sunbelt cities: politics and growth since World War II*, edited by Richard M. Bernard and Bradley R. Rice. Austin, Tex.: University of Texas Press.

Kemerer, F. and J. Walsh. 1996. The educator's guide to Texas school law. Austin, Tex.: University of Texas Press. 410 pp.

Key, V.O., Jr. 1949. Southern politics is state and nation. New York: Knopf. 675 pp.

Kirby, J.T. 1987. Rural worlds lost: the American South, 1920-1960. Baton Rouge: Louisiana State University Press. 390 pp.

Kirsten, P.N. 1977. Anglo over Bracero: a history of the Mexican-American worker in the United States from Roosevelt to Nixon. San Francisco: R and E Research Associates.

Kline, R. 1974. Education in Louisiana - history and development. Baton Rouge: Claitor's Publishing Division.

Kluger, R. 1976. Simple justice: the history of Brown v. Board of Education and black America's struggle for equality. New York: Alfred A. Knopf. 823 pp.

Kniffen, F.B., H.F. Gregory, and G.A. Stokes. 1987. The historic Indian tribes of Louisiana from 1542 to the present. Baton Rouge: Louisiana State University Press. 324 pp.

Kost, G.E. 1984. Fifty years: Del Mar recalls its colorful past in this half-century birthday year. *Voyageur: Del Mar College* 19 (1):2-7.

Kramm, C. 1998. Going for broke. *Southern Exposure* 26 (Summer/Fall):25.

Krannich, R.S. and B. Zolinger. 1997. Pursuing Rural Community Development in Resource-Dependent Areas: Obstacles and Opportunities. In *Research in Community Sociology*, Volume 7, edited by Dan Chekki. Greenwich: JAI. pp. 201-222.

Krapf, D. 1993. Steep decline in Gulf menhaden landings. *National Fisherman* 74 (2):20.

Krapf, D. 1994. Gulf menhaden catch rebounds. *National Fisherman* 74 (11): 68.

Kreidler, T. 1997. The offshore oil industry. Unpublished Ph.D. dissertation, Texas Tech University. vi, 266 pp.

Ladino, R.D. 1996. Desegregating Texas schools: Eisenhower, Shivers, and the crisis at Mansfield High. Austin: University of Texas Press. 208 pp.

Lafourche Parish School Board. 1997. Files of the Business Manager. October 23.

Lamphear, F.C., J.R. Schmidt, and R.T. Konecny. 1986. Analysis of indicators for socioeconomic impacts due to oil and gas activities in the Gulf of Mexico, Year II. (Contract No. 14-12-0001-30275) submitted to the Minerals Management Service, New Orleans, Louisiana. V, 236 pp.

Landis, P.H. 1938. The rise of urban America. New York: Arno Press and The New York Times. 148 pp.

Landry, J. 1998. Department of Engineering Technology, Nicholls State University, oral communication.

Landsford, M. and L.S. Howorth. 1994. Legal impediments to limited entry fishing regulation in the Gulf States. *Natural Resources Journal* 34: 411-442.

Laska, S., V.K. Baxter, R. Seydlitz, R.E. Thayer, S. Brabant, and C. Forsyth. 1993. Impact of offshore petroleum exploration and production on the social institutions of coastal Louisiana. Prepared by University of New Orleans Environmental Social Science Research Institute for U.S. Department of the Interior, Minerals Management Service, Gulf of Mexico OCS Region, New Orleans. Contract no. 14-35-0001-30470 OCS Study MMS 93-0007. August 1993. xiii, 246 pp.

Lazerson, M. and W. N. Grubb. 1974. American education and vocationalism. New York: Teachers College Press. 176 pp.

Leamer, E.E. 1985. Vector autoregressions for causal inference. In *Understanding Monetary Regimes* (supplement to Journal of Monetary Economics) edited by K. Brunner and A. Meltzer. pp. 255-304.

Leistritz F.L. and K.C. Maki. 1981.Socioeconomic effects of large-scale resource development projects in rural areas: the case of McLean County, North Dakota. North Dakota State University, Department of Agricultural Economics, Agricultural Economics Report No. 151. 103 pp.

Leistritz, F.L. and S.H. Murdock. 1981. The socioeconomic impact of resource development: methods for assessment. Socio Impact Assessment Series No. 6. Boulder, Colo.: Westview Press, 1981. 285 pp.

Lewis, J., M. Shrimpton, and K. Storey. 1988. Family members' experience of offshore oil work in Newfoundland. In *Women, Work, and Family in the British, Canadian, and Norweigian Offshore Oilfields*, edited by J. Lewis, M. Porter, and M. Shrimpton. London: Macmillan Press. pp. 163-189.

Link, W.A. 1988. Privies, progressivism, and public schools: health reform and education in the rural south, 1909-1920. *Journal of Southern History* 54(Nov.)623-42.

Link, W.A. 1999. The school that built a town: public education and the Southern social landscape, 1880-1930. In *Essays in twentieth-century Southern education: exceptionalism and its limits*, edited by Wayne J. Urban. New York: Garland. pp. 19-42.

Liu, L., G. Hudak, G. Box, M. Muller, and G. Tiao.1994. SCA statistical system. Oak Brook, IL.: Scientific Computing Associates Corp.

Loftin, B.K. 1971. A social history of the mid-Gulf South, 1930-1950. Ph.D. dissertation, University of Southern Mississippi. Vi, 348 pp.

Louisiana Almanac. 1998. Gretna, La.: Pelican Publishing Co.

Louisiana Department of Education. 1941, 1948-1953 (inclusive), 1959-1967 (inclusive), 1968-1976 (inclusive), 1979-1996 (inclusive). Annual Reports.

Louisiana Department of Natural Resources. 1996. Louisiana Energy Facts.

Louisiana Land and Exploration Company (LLEC). 1928. Annual report. Copy on file, Special Collections, Hill Archives, Louisiana State University, Baton Rouge.

Louisiana State University, Coastal Marine Institute. 1996. Socioeconomic Baseline Study of the Gulf of Mexico Region. Prepared for the Minerals Management Service, Gulf of Mexico Region. CD-Rom.

Love, R.W., Jr. 1992. History of the U.S. Navy. Vol. 2:1942-1991. Harrisburg, PA: Stackpole Books. 904 pp.

Lynch, J.E. 1970. Local economic development after military base closures. New York: Praeger Publishers. 350 pp.

Mabry, H.C., III. 1999. Alabama economic development: advantages and limitations. *Southern Business and Economic Journal* 22 (3):204-217.

Maddala, G.S. 1992. Introduction to Econometrics (2nd Ed.). Englewood Cliffs, NJ.: Prentice Hall.

Mahan, H.F., ed. 1979. South Alabama toward 2000: the future quality of life. Mobile: South Alabama Review. iv, 129 pp.

Machlis, G.E., J.E. Force, and R.G. Balice. 1990. Timber, minerals, and social change: an exploratory test of two resource-dependent communities. *Rural Sociology*55(3):411-424.

Malone, H.J. 1994. The economic impact of charter fishing in Orange Beach, Alabama. Prepared for the Orange Beach Fishing Association. 7 pp.

Marcus, A. 1992. Controversial issues in energy policy. New York: Sage Publications. 71 pp.

Margavio, A.V., and C.J. Forsyth, with S. Laska and J. Mason. 1996. *Caught in the net: the conflict between shrimpers and conservationists*. College Station: Texas A&M University Press. 156 pp.

Margo, R.A. 1985. Disfranchisement, school finance, and the economics of the segregated schools in the United States South, 1890-1910. New York: Garland.

Maril, R.L. 1986. Cannibals and condos: Texans and Texas along the Gulf Coast. Texas A&M Press. 136 pp.

Maril, R.L. 1983. Texas shrimpers: community, capitalism, and the sea. College Station: Texas A&M University Press. 222 pp.

Maril, R.L. 1995. The bay shrimpers of Texas: rural fishermen in a global economy. Lawrence: University Press of Kansas. 304 pp.

Marquis, D.M. 1978. In search of Buddy Bolden: first man of jazz. Baton Rouge: Louisiana State University Press. 176 pp.

Mathis News. 1970. "Politics, farm news headline '69 news." January 1. p. 1, 6.

Mathis News. 1970. "Local doctor slain by sheriff's deputy." July 16. p. 1.

Mathis News. 1970. "San Patricio Grand Jury no bills deputy sheriff." October 8. p. 1.

Mathis News. 1993. "Mathis prison project not dead." November 25. p. 1.

Mathis School District Administrative Office. 1998. Files of the Acting Administrator for Finance and Support Services. February 17.

McComb, D. 1981. Houston: a history. Austin, Tex.: University of Texas Press.

McComb, D. 1986. Galveston: a history. Austin, Tex.: University of Texas Press. 293 pp.

McDonald, E. 1957. Letter to Hector Garcia, November 22, 1957. Copy on file, Hector P. Garcia Papers, Special Collections, Bell Library, Texas A&M University-Corpus Christi.

McDonnell, J.M. 1994. Mobile: A Gulf Coast treasure. Montgomery, Ala.: Community Communications. 240 pp.

McDonough, M. and J. Parker. 1995. Status and potential of Michigan natural resources. Michigan Agricultural Experiment Station, Michigan State University, Special Report 82. 17 pp.

McGovern, J.R. 1976. The emergence of a city in the modern South: Pensacola, 1900-1945. Deleon Springs, Fla. vi, 250 pp.

McKenzie, L.S., III, Pamela J. Xander, Mary T.C. Johnson, Beatrice Baldwin, and Donald W. Davis. 1993. Socioeconomic impacts of declining outer continental shelf oil and gas activities in the Gulf of Mexico. Prepared by Applied Technology Research Corporation for U.S. Department of the Interior, Minerals Management Service, Gulf of Mexico OCS Region, New Orleans, LA. Contract no. 14-12-0001-30335 OCS Study MMS 93-0028. November 1993. xv, 240 pp.

MDC Inc. 1996. State of the south. Chapel Hill, NC: MDC, Inc.

Meyer-Arendt, K.J. 1985. The Grand Isle, Louisiana resort cycle. *Annals of tourism research* 12: 449-465.

Michot, S.S. and J.P. Doucet, eds. 1996. The Lafourche country II: the heritage and its keepers. Thibodaux, LA: Lafourche Heritage Society. 285 pp.

Miller, W.H. 1933. The history of public education in Lafourche Parish, Louisiana. M.A. thesis, Louisiana State University, Baton Rouge. ii, 79 pp.

Mississippi Folklife. 1995.

Mobil Oil Company. 1998. Responses to South Mobile County Community. Industrial Advisory Board.

Mobile Area Chamber of Commerce. 1978. Theodore industrial area. Mobile Area Chamber of Commerce, Mobile, Ala. ca. 20 pp.

Mobile County News. 1985. "On Theodore Canal." February 21. p. 4.

Mobile County Public Schools, Student Support Services and Counseling. Files of the Senior Counselor. May 20.

Mobile County Regional Planning Commission. 1965. Mobile County comprehensive plan. Mobile County Regional Planning Commission, Mobile.

Mobile Press Register. 1946. "More than 20 workers injured by German war gas; chemical warfare experts sent here by airplane." June 19. p.1

Mobile Press Register. 1946. "Army keeps sharp eye on Navy dump workers." July 11. (No page given.)

Mobile Press Register. 1946. "8 more workers suffer gas burns unloading vessel." July 16. (No page given.)

Mobile Press Register. 1947. "Tons of dead fish wash up along Gulf coast; fishermen and U.S. experts differ on cause. January 25. (No page given.)

Mobile Press Register. 1947. "Mobilian charges mustard gas injured throat; asks $10,000. August 12. (No page given.)

Mobile Press Register. 1967. "Construction begun on cast iron plant." January 24. P.1

Mobile Press Register. 1973. "Annexation bid opposed." March 28. (No page given.)

Mobile Press Register. 1973. "Tillman's Corner rep hits annexation move." March 29. p.1.

Mobile Press Register. 1976. "On proposed annexation." February 7. (No page given.)

Mobile Press Register. 1976. "Theodore annexation meet slated." March 16. (No page given.)

Mobile Press Register. 1978. "Plant closing at Theodore is announced." September 25. p.1

Mobile Press Register. 1985. "Association seeks support for TC incorporation vote." March 21. p. A-16.

Mobile Register. 1998. " Phenolchemie hearing tonight." May 11. pp. 1B, 3B.

Mobile Register. 1998. "Chemical concerns: fight against plant intensifies." May 12. pp. 1A, 5A.

Mobile Register. 1998. "When a gas plant moves next door." May 14. pp. 1A, 4A.

Mobile Register. 1998. "Industrial advisory committee has mixed results in south Mobile area." May 16. p. 6A.

Molotch, H. and W. Freudenburg. 1996. *Santa Barbara County: Two Paths.* Camarillo, Ca.: Minerals Management Service, Pacific OCS Region. OCS Study MMS 96-0036. July. 145 pp.

Montejano, D. 1977. Race, labor repression, and capitalist agriculture: notes from South Texas, 1920-1930. Institute for the Study of Social Change, Berkeley, CA, Working Paper Series No. 102. 54 pp.

Montejano, D. 1987. Anglos and Mexicans in the making of Texas, 1836-1986. Austin: University of Texas Press. 83 pp.

Montz, S.D., Jr. 1970. Statistical data on enrollment and predictions of Nicholls State College, a field study presented to the graduate committee of Nicholls State College in fulfillment of the requirements for the degree of specialist in education. Thibodaux, La. May. 36 pp.

Moses, M. 1996. Texas scholars 1996 and beyond. Vol. May 1999, http://www.netins.net/showcase/fwr/loop/17022007.htm. : Texas Business and Education Coalition.

Moyers, B. 1971. Listening to America: a traveler rediscovers his country. New York: Harper & Row. 223-249 pp.

Murdock, S.H., M.N. Hogue, M. Michael, S. White, and B. Pecotte. 1997. The Texas challenge: population change and the future of Texas. College Station: Texas A&M University Press. 233 pp.

Murray, T.J. 1994. Future use and management of shrimp in the Gulf of Mexico. In *Coastal fishing: what is the future?* Summary of proceedings, Louisiana Sea Grant College Program. Louisiana Cooperative Extension Service. Baton Rouge: LSU Agricultural Center. 42-44 pp.

Nelson, B. 1993. Organized labor and the struggle for black equality in Mobile during World War II. *Journal of American History* 80 (December): 952-988.

Nelson, C.P. and C.I. Plosser. 1982. Trends and random walks in macroeconomic time series: Some Evidence and Implications. *Journal of Monetary Economics*. 139-162.

Nevarez, L., H. Molotch, and W. Freudenburg. 1996. San Luis Obispo County: a major switching. Camarillo, Ca.: Minerals Management Service, Pacific OCS Region. July. 130 pp.

New York Times. February 8, 1976-February 13, 1976.

Nicholls State University Registrar's Office. 1998.

Norusis, M.J. SPSS for Windows, base system user's guide, release 6.0. Chicago, Ill.: SPSS Inc.

Norville, W. 1975. Shoreside effects of offshore oil vary widely. *National fisherman* 56 (5):4-5, 12B.

Oil and Gas Journal. March 26, 1936.

Oil and Gas Journal. May 29, 1960.

Oil and Gas Journal. June 7, 1965.

Oil and Gas Journal. August 22, 1966.

Oil and Gas Journal. July 23, 1984.

Oil and Gas Journal. May 5, 1986.

Oil and Gas Journal. July 30, 1990.

Oil and Gas Journal. April 27, 1992.

Oil and Gas Journal. September 21, 1992.

Oil and Gas Journal. March 22, 1999.

Olien, R.M. 1996. Oil and gas industry. In *The new handbook of Texas.* Austin: The Texas State Historical Association. pp. 1119-1128.

Oliver, P. 1969. The story of blues. Philadelphia: Northeastern University Press. 288 pp.

Orr, M.T. 1998. Integrating secondary schools and community colleges through school-to-work transition and educational reform. *Journal of vocational education research* 23 (2):93-113.

Paisley, C. 1976. Madison County's Sea Island cotton industry, 1870-1916. *Florida Historical Quarterly* 54, no. January:285-305.

Paulsen, K, H. Molotch, and W. Freudenburg. 1996. Ventura County: oil, fruit, commune, and commute. Camarillo, Ca: Minerals Management Service, Pacific OCS Region, OCS Study MMS 96-0035. July. 143 pp.

Perloff, H., ed. 1960. Regions, resources, and economic growth. Baltimore: John Hopkins Press. 716 pp.

Petroleum Engineer. 1936. Review of petroleum development in coastal Texas. July 1.

Petroleum Engineer. 1939. Submersible steel barge supports rig and equipment for marine drilling. April, 29.

Phenolchemie, Inc. n.d. Facts about Phenolchemie/Theodore. Theodore, Ala.: Phenolchemie, Inc.

Phillips, E.H. 1951. The Gulf Coast rice industry, *Agricultural History.* 25(Apr):91-96.

Pielke, R.A., Jr. and R.A. Pielke, Sr. 1997. Hurricanes: their nature and impacts on society. Chichester, England: John Wiley & Sons. 279 pp.

Pierce, T.M. 1955. White and negro schools in the South: an analysis of biracial education. Englewood Cliffs, NJ: Prentice Hall. xii, 338 pp.

Porphet, E.L., ed. 1945. Building a better southern region through education: a study in state and regional cooperation. Tallahassee: Southern States Work-Conference on School Administrative Problems. xviii, 418 pp.

Port of Corpus Christi. 1985-86. The port book. Corpus Christi, TX: Port of Corpus Christi. 75 pp.

Potter, D.M. 1972. The South and the concurrent majority. Baton Rouge: Louisiana State University Press . 89 pp.

Powdermaker, H. 1993. After freedom: a cultural study in the deep south. Madison: University of Wisconsin Press.

Power, T.M. 1996. Lost landscapes and failed economies: the search for a value of place. Washington, DC.: Island Press. xiii, 304 pp.

Pratt, J.A. 1980. The growth of a refining region. Greenwich, CT: JAI Press. 297 pp.

Pratt, J.A., T. Priest, and C.J. Casteneda. 1997. Offshore pioneers: Brown and Root and the history of offshore oil and Gas. Houston: Gulf Publishing Company. 302 pp.

Pratt, J.W. and R. Schaifer. 1984. On the nature and discovery of structure. *Journal of the American Statistical Association*. 79:9-21.

Prosser, C.A. and T.H. Quigley. 1949. Vocational education in a democracy, revised edition. Chicago: American Technical Society.

Pycior, J.L. 1997. LBJ and Mexican Americans: paradox of power. Austin: University of Texas Press. 329 pp.

Rabinowitz, H.N. 1992. The first new South, 1865-1920. Arlington Heights, Ill.: Harlan Davidson. xiii, 232 pp.

Raper, A.F. and I. DeA. Reid. 1941. Sharecroppers all. Chapel Hill: UNC Press. 281 pp.

Rehder, J.B. 1973. Sugar Plantations in Louisiana: origin, dispersal, and responsible location factors. *West Georgia College Studies in the Social Sciences* 12:78-93.

Roberts, K.J. and P.W. Pawlyk. 1986. Louisiana's commercial fishing licenses issued from 1976 to 1985. Baton Rouge: Louisiana State University, Center for Wetland Resources. 15 pp.

Roberts, K.J. and V. Guillory. 1997. Coastal fishing '97: use of Louisiana's blue crab resource. Baton Rouge: Louisiana Cooperative Extension Service. 47 pp.

Rodriquez, L.J. 1967. The Terrebonne Project: ideological revolution or economic expediency? *Louisiana Studies* 6 (Fall):267-277.

Rogers, B.F. 1960. Florida in World War II: tourists and citrus. *Florida Historical Quarterly* 39(July):34-41.

Rogers, C.M. 1996. Water resource development and its effects on the human community: the Tennessee-Tombigbee Waterway, Southeastern United States. In *Water, culture, and power: local struggles in a global context*, edited by John M. Donahue and Barbara Rose Johnston. Washington, DC.: Island Press. pp. 123-139.

Roland, C.P. 1975. The improbable era: The South since World War II. Lexington: The University Press of Kentucky. 228 pp.

Rome, J. 1996. A history of Golden Meadow. In *The Lafourche country II: the Heritage and its keepers*, edited by Stephen S. Michot and Joan P. Doucet. Thibodaux, LA: Lafourche Heritage Society. pp. 71-74.

Rose, D. 1999. Department of Political Science, Tulane University, oral communication, September 15.

Rose, M. 1995. Possible lives: the promise of public education in America. New York: Penguin Books. 454 pp.

Ryan, R.H. 1961. Corpus Christi: area resources for industry. The University of Texas, Bureau of Business Research, Austin, Area Economic Survey No. 1. 370 pp.

Samora, J. and P.V. Simon. 1993. A history of the Mexican American people. South Bend, IN: University of Notre Dame Press. 256 pp.

Samuel, L. 1998. Workers of the world, network! *Southern Exposure* 26 (Summer/Fall):53.

San Miguel, G., Jr. and R.R. Valencia. 1998. From the Treaty of Guadalupe Hidalgo to Hopwood: the educational plight and struggle of Mexican Americans in the Southwest. *Harvard Educational Review* 68 (3, Fall):353-412.

Savells, J. 1993. The "Cajun" subculture: microtrends for the 1990s. *International Journal of Comparative Sociology* 34 (1-2):113-121.

Schuller, G. 1968. Early jazz: its roots and musical development. New York: Oxford University Press, Inc. 416 pp.

Schulman, B.J. 1991. From cotton belt to sunbelt: federal policy, economic development, and the transformation of the South, 1938-1980. New York: Oxford University Press. 333 pp.

Schulte, J.H. 1961. Mobile in 1960: a city of the new South. M.A. thesis, Department of History and Government, Mississippi Southern College, Hattiesburg.

Schweid, R. 1980. Hot peppers: Cajuns and Capsicum in New Iberia, Louisiana. Seattle: Madrona Publishers. x, 223 pp.

Sellers, M.T. 1957. The history of public schools in Nueces County. M.S. thesis, Education, Texas A&I University, Corpus Christi. 83 pp.

Seydlitz, R., S.B. Laska, D. Spain, E.W. Triche, and K.L. Bishop. 1993. Development and social problems: the impact of the offshore oil industry on suicide and homicide rates. *Rural Sociological Society* 58 (1):93-110.

Seydlitz, R. and S. Laska. 1994. Social and economic impacts of petroleum "boom and bust" cycles. Prepared by Environmental Social Science Research Institute University of New Orleans for U.S. Department of the Interior, Minerals Management Service, Gulf of Mexico OCS Region, New Orleans. Contract no. 14-35-0001-30470 OCS Study MMS 94-0016. June 1994. 131 pp.

Seydlitz, R., P. Jenkins, and S. Hampton. 1995a. The impact of energy development on education. *Impact Assessment* 13 (Spring):31-46.

Seydlitz, R., J. Sutherlin, and S. Smith. 1995b. Characteristics and possible impacts of a restructured OCS oil and gas industry in the Gulf of Mexico. Prepared by Coastal Marine Institute Louisiana State University for U.S. Department of the Interior, Minerals Management Service, Gulf of Mexico OCS Region, New Orleans. Contract no. 14-35-0001-19903 OCS Study MMS 95-0055. October 1995. xv, 188 pp.

Shelby, R. 1995. Letter to Phillip Hinesley. Copy on file, Bureau of Applied Research in Anthropology, University of Arizona.

Shrimpton, M. and K. Storey. 1996. Newfoundland and the offshore oil industry, 1963-1995. *Islander Magazine*. January. 5 pp

Silver, C. and J.V. Moeser. 1995. The separate city: Black communities in the urban south, 1948-1968. Lexington: University Press of Kentucky. 215 pp.

Sims, C.A. 1980. Macroeconomics and reality. *Econometrica* 48: 1-48.

Sims, P. 1978. The Klan. New York: Stein and Day. 355 pp.

Sitterson, J.C. 1953. Sugar country: the cane sugar industry in the South, 1753-1950. Lexington: University of Kentucky Press. 414 pp.

Smith, M.H., L.J. Beaulieu, and A. Seraphine. 1995. Social capital, place of residence, and college attendance. *Rural sociology* 60:363-380.

Sosna, M. 1987. More important than the Civil War? The impact of World War II on the South. In *Perspectives on the American South: an annual review of society, politics, and culture,* edited by James C. Cobb and Charles R. Wilson. New York. pp. 143-158.

Southern Exposure Staff. 1988. The censorship monopoly. *Southern Exposure* 16 (Fall):15.

Southern Exposure Staff. 1993. Toxic Struggles. *Southern Exposure.* XXI(Fall):21-22.

State Superintendent of Public Instruction. 1948. Instructions and regulations to all school officers of county, city, town and school districts. Copy on file, box 142, folder 10, Hector P. Garcia Papers, Special Collections, Bell Library, Texas A&M University-Corpus Christi.

Steinberg, T. 1995. Slide mountain, or the folly of woning nature. Berkeley: University of California Press. 205 pp.

Steinberg, T. 1997. Do-it-yourself deathscape: the unnatural history of natural disaster in South Florida. *Environmental History* 2 (4):414-438.

Stern, D., N. Finkelstein, J.R. Stone, III, J. Latting, and C. Dornsife. 1995. School to work: research programs in the United States. London; Washington, DC: The Falmer Press. 1-16, 124-129 pp.

Stewart, M.A. 1996. "What nature suffers to groe": life, labor, and landscape on the Georgia coast, 1680-1920. Athens: University of Georgia Press. 370 pp.

Stine. J.K. 1993. Mixing Waters: Environment, Politics, and the Building of the Tennessee-Tombigbee Waterway, Akron, Ohio.

Stinson, T.F. 1982. Review of text "The socioeconomic impact of resource development: methods for assessment." *Agricultural Economics Research*, Vol. 34, No. 2. April, pp. 32-33.

Stobaugh, R. and D. Yergin, eds.1983. Energy future. Third edition. New York: Vintage Books. 459 pp.

Stubbing, R.A., with R.A. Mendel. 1986. The defense game: an insider explores the astonishing realities of America's defense establishment. New York: Harper & Row, Publishers. 445 pp.

Study Committee on Higher Education for the Corpus Christi Area (SCHE). 1967. Higher education in the Corpus Christi area: the next 25 years, Corpus Christi, TX.

Swanson, J.C. 1966. Development of federal legislation for vocational education. Chicago: American Technical Society.

Swearingen, T.C. and L.A. Myers. 1995. 1994 National Shrimp Festival visitor survey results. University of South Alabama, Department of Health, Physical Education, and Leisure Services, Mobile. 42 pp.

Tamberrino, F.M. 1993. Preparing for a declining defense budget: the case of Pensacola, Florida. *Economic Development Review* 11(Fall):42-58.

Texas Railroad Commission, annual 1954 to 1996. Oil and Gas Division. *Oil and gas statistics, oil production and well counts, 1935-1996.*

Thompson, J.J., Jr. 1982. Tried as by fire: Southern Baptists and the religious controversies of the 1920s. Macon, Ga.: Mercier University Press. 224 pp.

Thompson, J.F. 1973. Foundations of vocational education: social and philosophical concepts. Englewood Cliffs, NJ: Prentice-Hall, Inc. xvii, 260 pp.

Timmons, G. 1988. Education, industrialization, and selection. London; New York: Routledge. 242 pp.

Tindall, G.B. 1967. The emergence of the new South: revolutions in the Southern Economy since the civil war. Baton Rouge: Louisiana State University Press. 808 pp.

Tolbert, C.M. 1995. Oil and gas development and coastal income inequality: a comparative analysis of New Orleans. U.S. Department of the Interior, Minerals Management Service, Gulf of Mexico OCS Region, New Orleans. Contract no. MMS Cooperative Agreement 14-35-0001-30470 OCS Study MMS 94-0052. February 1995. 75 pp.

Twight, C. 1990. Department of Defense attempts to close military bases: the political economy of congressional resistance. In Arms, Politics, and the Economy, edited by Robert Higgs and William A. Niskanen. New York: Holmes and Meier. pp. 236-280.

United Packinghouse Workers. 1955. Statement submitted to the Department of Agriculture by the United Packinghouse Workers of America, C.I.O. on the Subject of Wages for Persons Employed in the Production, Cultivation or Harvesting of Sugarcane During the Calendar Year 1956, at the Hearing on July 29, 1955 at Thibodaux, Louisiana. Microfiche copy on file, University of Arizona Library.

U.S. Army Corps of Engineers. 1978. Draft Environmental Impact Statement, Deep Draft Inshore Port at Harbor Island, Texas in Nueces County, Texas. Galveston, Texas: U.S. Army Corps of Engineers.

U.S. Department of Agriculture, Economic Research Service.1989. 1989 Revised County Typology. Http:www.econ.ag.gov/epubs/other/typology.

U.S. Department of Commerce, Bureau of the Census. 1998. County Business Patterns. Http://fisher.lib.virginia.edu/cbp/county.html.

U.S. Department of Commerce, Bureau of the Census. 1999. General population and housing characteristics: 1990. Http://factfinder.census.gov.

U.S. Department of Commerce, Bureau of the Census. 1930 to 1998 annual. Statistical Abstract of the United States. Washington, DC.

U.S. Department of Commerce, Bureau of the Census. 1914, 1982, 1987, 1992, 1997. Census of agriculture. Washington, DC.

U.S. Department of Commerce, Bureau of the Census. 1930, 1954, 1970, 1980, 1990. Census of population and housing. Washington, DC.

U.S. Department of Commerce, Bureau of Economic Analysis. 1998. Regional Economic Information System, 1969-1995. Http:fisher.lib.virginia.edu/reis/index/htlm.

U.S. Department of Education. 1998. Goals 2000: Reforming education to improve student achievement April 30. Http://www.ed.gov.pubs/G2KReforming/index.htlm.

U.S. Department of Energy. 1991. National energy strategy, 1st ed. Washington, D C. 101 pp.

U.S. Department of Energy, Office of the Strategic Petroleum Reserve. 1998. World oil market and oil price chronologies: 1970-1997.

U.S. Department of the Interior. 1964. The Commercial Fisheries of the Gulf and South Atlantic region and their needs. Washington, DC.

U.S. Department of the Interior. 1996. Outer continental shelf oil & gas leasing program: 1997-2002. final environmental impact statement. Vol. II. U.S. Department of the Interior. Minerals Management Service.

U.S. Department of the Interior, Minerals Management Service. 1997. Federal Offshore Statistics: 1995. OCS Report MMS 97-0007. 103 pp.

U.S. Department of the Interior, Minerals Management Service. 1998. Federal Offshore Statistics: 1995. http://www.mms.gov.itd/pubs/1997/97-0007/fos95.htm.

U.S. Department of the Navy. 1987. Final Environmental Impact Statement, United States Navy Gulf Coast strategic homeporting. Department of the Navy, Southern Division, Naval Facilities Engineering Command, Charleston, SC.

U.S. Department of the Navy. 1995. Draft Environmental Impact Statement, Establishment of the United States Navy Mine Warfare Center of Excellence in the Corpus Christi Bay Area, Texas. Department of the Navy, Southern Division, Naval Facilities Engineering Command., North Charleston, SC.

U.S. General Accounting Office (GAO). 1991. Navy homeports: expanded structure unnecessary and costly. U.S. General Accounting Office, Washington, DC, Report to Congressional Requesters GAO/NSIAD-91-158. 73 pp.

U.S. General Accounting Office (GAO). 1993. Mine warfare: consolidation at Ingleside has not been justified. Washington, DC, Report to Congressional Requesters GAO/NSIAD-93-147. 10 pp.

U.S. General Accounting Office (GAO). 1998. Military bases: status of prior base realignment and closure rounds. U.S. General Accounting Office. Washington, DC, Report to the Honorable John E. Sununu, House of Representatives GAO/NSAID-99-36. 99 pp.

U.S. National Commission on Excellence in Education. 1983. A nation at risk: the imperative for educational reform. U.S. Department of Education, Washington, DC: Supt. of Docs No.: ED 1.2:N 21. v, 65 pp.

U.S. Secretary of the Army. 1978. Theodore Ship Channel, Mobile Harbor, Alabama. Government Printing Office, Washington, DC, Communication from the Secretary of the Army transmitting a special Corps of Engineers report.

von Flatern, R. 1997. Work force becoming critical: demand outstripping supply at all worker levels. *Offshore* (February): 32-34, 58.

Wade, W.W. 1997. Final Report (Draft) history of Coastal Alabama natural gas exploration and development. Prepared by Foster Associates, Inc. for the U.S. Department of the Interior, Minerals Management Service, Gulf of Mexico OCS Region, New Orleans. Contract no. 1435-01-CT-30829 Prepared under MMS contract 1435-01-96-CT-30829. August 1999. 169 pp.

Wade, W., J. Plater, and J.Q. Kelley. 1999. History of coastal Alabama natural gas exploration and development. Prepared by Foster Associates, Inc. for the U.S. Department of the Interior, Minerals Management Service, Gulf of Mexico OCS Region, New Orleans. Contract no. 1435-01-96-CT-30829. 189 pp.

Watters, P. and R. Cleghorn. 1967. Climbing Jacob's ladder: the arrival of Negroes in Southern politics. New York: Harcourt, Brace and World. xvi, 389 pp.

Webb, W.P. 1954. More water for Texas: the problem and the plan. Austin: University of Texas Press. 62 pp.

West Bay Watch. n.d. Fact Sheet: Phenolchemie and its added impact on South Alabama. Mobile, Ala.: West Bay Watch.

White, D.R.M. 1989. Sea turtles and resistance to TEDs among shrimp fishermen of the U.S. Gulf Coast. *Maritime Anthropological Studies (MAST)* 2 (1):69-79.

White, D.R.M. 1998. "Cultural Gumbo"? An ethnographic overview of Louisiana's Mississippi River Delta and selected adjacent areas. Prepared by Santa Fe Applied Cultural Dynamics, NM for U.S. National Park Service, Jean Lafitte National Historical Park and Preserve, New Orleans, LA. Contract no. NPS-1443PX753095188 NPS-D-146. xxii, 462 pp.

White, K.J. 1997. Shazam: The econometrics computer program, Version 8.0, user's reference manual. New York: McGraw-Hill.

White, L.J. 1991a. The S & L debacle: public policy lessons for bank and thrift regulation. New York: Oxford University Press. 287 pp.

White, R. 1991b. "It's your misfortune and none of my own." A new history of the American West. Norman: University of Oklahoma Press. 644 pp.

Wilkenson, K.K. 1986. In search of the community. *Rural Sociology* 51(1):1-17.

Williams, M. 1989. Americans and their forests: A historical geography. Cambridge, Eng.: Cambridge University Press. 621 pp.

Williams, T.H. 1969 [1981]. Huey Long. New York: Vintage Book Edition. 884 pp. [original Alfred A. Knopf, Inc., 1969].

Windham, O.A. 1971. A follow-up study of former students in vocational programs at South Louisiana Trade School, Houma, Louisiana, from July 1, 1967 through June 30, 1970. Specialist Degree, Nicholls State University, Thibodaux, La. 101 pp.

Wiygul, R.B. 1992. The structure of environmental regulation on the outer continental shelf: sources, problems, and the opportunity for change. *Journal of Energy, Natural Resources and Environmental Law* 12:75-180.

Wrather, W.E. 1945. Statement of the Director of the USGS before the U.S. Congress, Senate, Special Committee Investigating Petroleum Resources. Hearing of the 79th Congress, June. p. 9.

Wright, G. 1986. Old South, new South: revolutions in the southern economy since the Civil War. New York: Basic Books, Inc. 321 pp.

Wurzlow, H.E. 1986. I dug up Houma, Terrebonne. Vol. 6. 140 pp.

Wynn, L.N., ed. 1993. Florida at War. Saint Leo, Fla.: Saint Leo College Press. 178 pp.

Zachetmayr, M., Q. Jenkins, and M. McGettigan. 1983.Changing structure of agriculture in Louisiana social areas, 1940-1978. Louisiana State University Agricultural Center: Louisiana Agricultural Experiment Station, Bulletin No. 743. 35 pp.

Appendix A - Methodology

An overview of the steps used to conduct the study is shown in Figure A-1. This appendix describes the methodology used for four key components of the study -- issues to be studied; field work communities selection; conduct of field work; and regional trends analysis.

A.1 Issue Selection Criteria and Process

The issues selected for study were identified in a three-step process in which key issues were identified in a literature review, and screened or filtered through pre-established issue selection criteria (see Figure A-2). This process is described below.

A.1.1 Identification of Issue Areas

As input to the issue selection process, a literature review covering the following eight topics was conducted:

- History and impacts of industrial development (general)
- History and impacts of industrial development (Gulf of Mexico Region)
- Relevant public policies
- Labor relations
- Environmental history
- Culture, ethnicity, and race in the Gulf of Mexico Region
- Theoretical approaches/general methods
- Sociopolitical landscapes

The literature reviewed was drawn from books, journal articles, MMS-sponsored research reports, and current periodicals. The literature reviewed is included in an electronic bibliography, which is a separate deliverable for this project. The issues or recurring themes which emerged from the literature review were organized into ten categories as follows.

- Contours of the oil industry
- Demographic and economic change along the Gulf Coast
- Comparative response to OCS booms
- The historical fabric of Gulf Coast communities
- Occupational multiplicity
- Business and institutional adaptations to economic trends
- Education and community
- Competition over resources
- Changing environmental values along the Gulf Coast
- Comparative frameworks

Figure A-1. Overview of methodology.

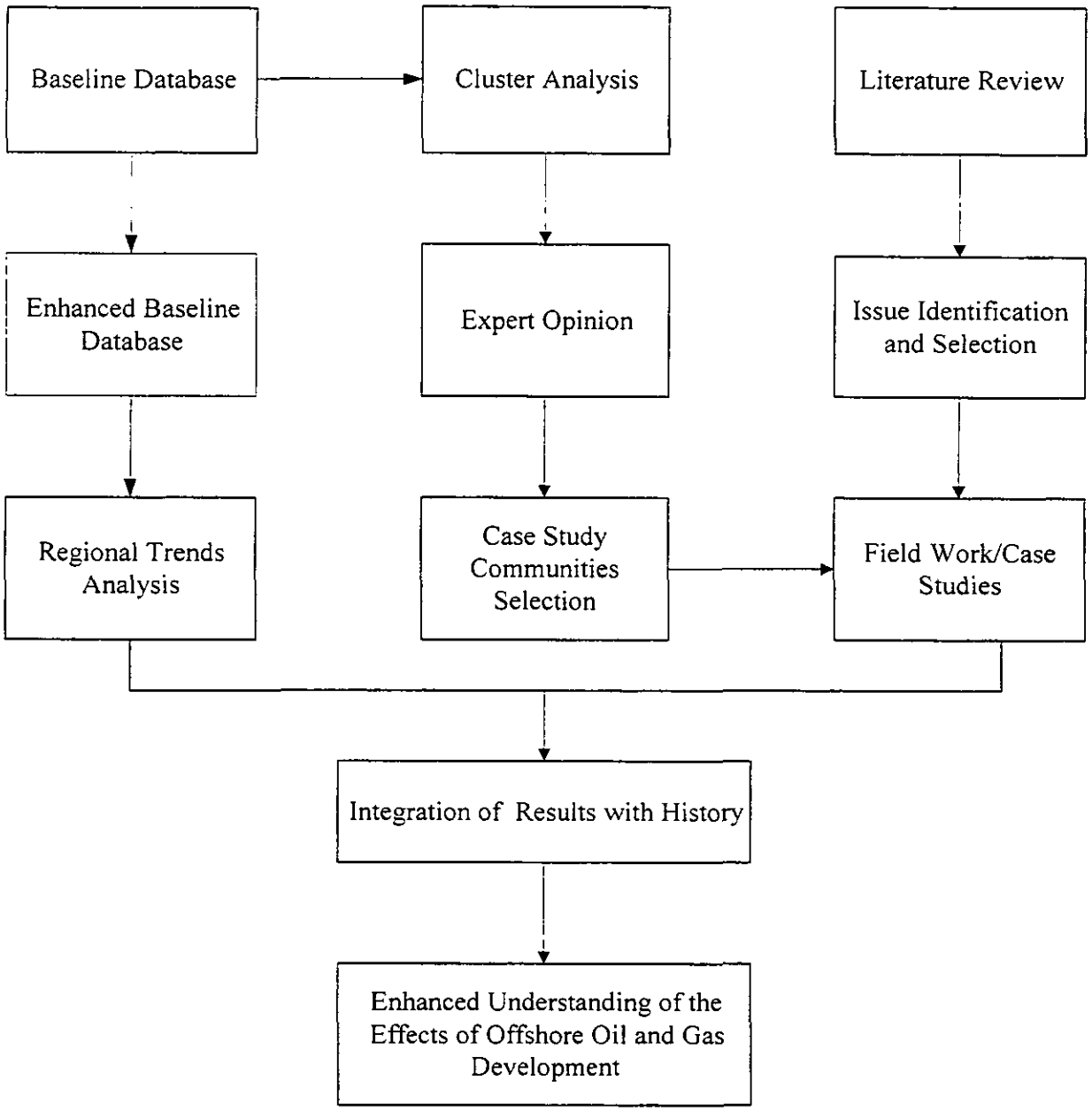
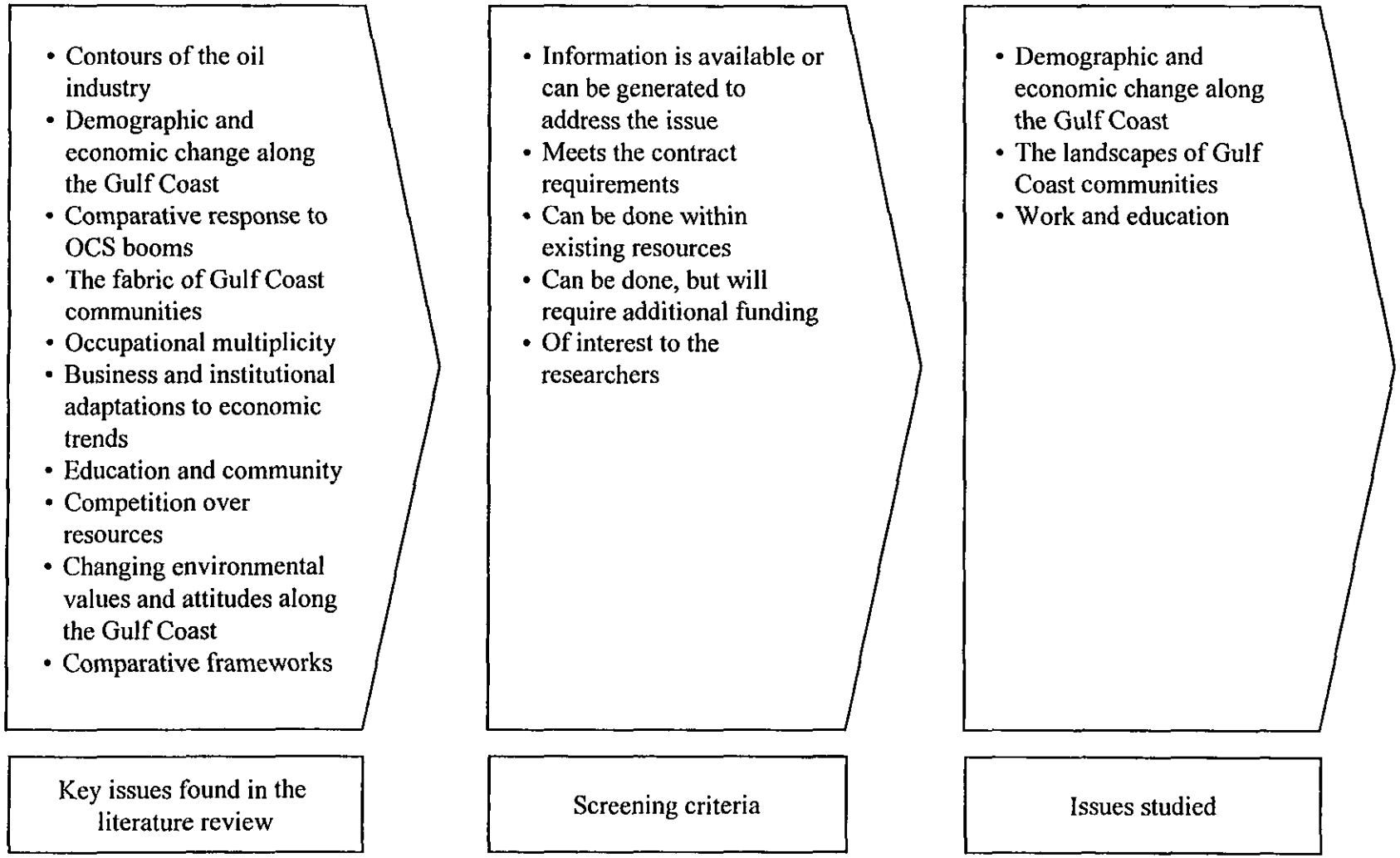


Figure A-2. Overview of issue selection process.



A.1.2 Issues Screening Process

The ten issue areas were presented and discussed at a 3-day meeting of the research team and MMS. Prior to discussion of the ten issue areas, the team established issue selection criteria which were designed to reflect the project's practical considerations (e.g., meeting contract obligations) and constraints (e.g., the available budget). The selection criteria are listed in Figure A-2. Each of the ten issue areas was summarized, discussed, and sometimes refined at the meeting. Following presentation and discussion of the ten issue areas, the issue selection criteria were re-visited and determined to still be appropriate. They were used to screen or filter the issue areas to identify those which should be recommended as the focus for the remainder of this study. During the screening process, two of the issue areas were combined (occupational multiplicity and business and institutional adaptation) and re-named (labor processes). Four issues emerged from this issue selection process as areas for further research in this study:

- Demographic and economic change along the coast
- The historical fabric or landscapes of the Gulf Coast communities
- Labor processes
- Education

The group discussion concluded that the body of knowledge on comparative frameworks would be used to answer questions about the similarities/dissimilarities of the effects of the offshore oil industry in the GOM and other regions and with other large-scale, regionally dominant industries. As reflected in the study report, the issues of labor processes and education were later collapsed into a single section, work and education (Section 7).

A.2 Field Work Communities: Selection Criteria and Process

The field work communities were selected in a two-part process. First, cluster analysis was used to identify groups of similar counties/parishes based on variables from the *Socioeconomic Baseline Study of the Gulf of Mexico Region* (baseline database) prepared for MMS by Louisiana State University. Then expert opinion from MMS, the project's Scientific Review Board (SRB), and the project team was used to select the county/parish study areas and the communities for field work.

Cluster analysis is a methodology for finding groups in data. A number of approaches have been used for determining clusters in previous studies and were reviewed for appropriateness to the current task (Tolbert, 1995; U.S. Department of Agriculture, Economic Research Services, 1989; Gramling, 1995; Seydlitz et al., 1995b; Laska et al., 1993; and Seydlitz and Laska; 1994).

After consideration of alternatives and evaluation of the available data, the cluster analysis for this study was run using the year with the most compete data set, 1990. This database contains 3,149 variables which are time specified (i.e., the data set constructs a variable for

each type of information and each U.S. Census time period). Data contained in the data set are organized in terms of demography, age, education, civil employment, establishments, income, and government finance and employment. The broad categories provide a basis for determining the groupings of counties/parishes. After eliminating variables with missing data, the cluster was run on SPSS using 611 variables.

Initially, the cluster analysis was conducted considering 74 counties/parishes from Texas to Florida which was used to define the study area. Both partitioned and hierarchial cluster analyses were conducted. With partitioning, k or the number of clusters is stated and the algorithms assign objects which are similar to the a priori stated k clusters. Depending upon the particular computer algorithm, hierarchial methods partition data into k clusters, where k goes from 1 to n (n is the number of objects or potential groups); some algorithms start with n clusters and conclude with one cluster. However, after conducting both partitioned and hierarchical cluster analyses, only the partitioned clusters were subsequently used since results for hierarchial and partitioned cluster analyses were identical for the same number of groupings or clusters. Cluster groups were initially formed in terms of 5, 6, 7, 8, 10, 15, and 20 groupings. The results showed that regardless of the number of groupings, five counties/parishes continuously grouped as single entities: (1) Dade (Miami), (2) Hillsborough (Tampa), (3) Pinellas (St. Petersburg), (4) Orleans (New Orleans), and (5) Harris (Houston). Since all of the five "stand-alone" groups contain large cities, the cluster analysis was re-run omitting the data for the five counties/parishes. The latter cluster analysis was restricted to 5, 6, 7, 8, and 10 clusters (see Tables A-1 to A-5). Additional cluster analysis allowing the iterative exclusion of variables did not substantially change the groupings. All 611 variables, less those variables which contained missing data, were used for the additional analysis.

Even with the additional cluster analysis, there was a tendency for at least one cluster to contain a large number of counties or parishes. To further refine the analysis, the cluster analysis was run for all counties/parishes assigned to the first group in the five-group cluster (Table A-1). Results of the latter cluster analysis, along with the final grouping of counties/parishes, are shown in Table A-6.

Then, expert opinion from MMS, the research team, and the SRB was used to select the three study area that included five counties/parishes from four of the clusters. The study areas are located in three states, Louisiana, Texas, and Alabama which have different histories in oil and gas development activities. The five counties/parishes became the focus of the regional trends analysis. The field work was conducted in six communities within these counties/parishes. The communities were selected following scoping trips and using expert opinion from MMS, the research team, and the SRB.

A.3 Conduct of Field Work

Sections 6 and 7 of this report are based primarily on ethnographic fieldwork conducted at selected research sites along the Gulf of Mexico in 1997 and 1998. The main organizational

Table A-1. Results of cluster analysis restricted to five groups.

County/Parish	Cluster/Group	County/Parish	Cluster/Group
Aransas, Texas	1	St. James, Louisiana	1
Ascension, Louisiana	1	St. John the Baptist, Louisiana	1
Baldwin, Alabama	1	St. Mary, Louisiana	1
Bay, Florida	1	Stone, Mississippi	1
Calhoun, Texas	1	Taylor, Florida	1
Cameron, Louisiana	1	Terrebonne, Louisiana	1
Chambers, Texas	1	Vermilion, Florida	1
Charlotte, Florida	1	Victoria, Texas	1
Citrus, Florida	1	Wakulla, Florida	1
De Soto, Florida	1	Waller, Texas	1
Dixie, Florida	1	Walton, Florida	1
Franklin, Florida	1	West Baton Rouge, Louisiana	1
Gulf, Florida	1	Willacy, Texas	1
Hancock, Mississippi	1		
Hardin, Texas	1	Brazoria, Texas	2
Hernando, Florida	1	Calcasieu, Louisiana	2
Iberia, Louisiana	1	Collier, Florida	2
Jackson, Mississippi	1	Escambia, Florida	2
Jackson, Texas	1	Fort Bend, Texas	2
Jefferson, Florida	1	Galveston, Texas	2
Kenedy, Texas	1	Harrison, Mississippi	2
Kleberg, Texas	1	Jefferson, Texas	2
Lafourche, Louisiana	1	Lafayette, Louisiana	2
Levy, Florida	1	Montgomery, Texas	2
Liberty, Texas	1	St. Tammany, Louisiana	2
Livingston, Louisiana	1		
Matagorda, Texas	1	Cameron, Texas	3
Monroe, Florida	1	Nueces, Texas	3
Okaloosa, Florida	1		
Orange, Texas	1	East Baton Rouge, Louisiana	4
Plaquemines, Louisiana	1	Jefferson, Louisiana	4
Refugio, Texas	1	Mobile, Louisiana	4
San Patricio, Texas	1		
Santa Rosa, Florida	1	Lee, Florida	5
St. Bernard, Louisiana	1	Manatee, Florida	5
St. Charles, Louisiana	1	Pasco, Florida	5
		Sarasota, Florida	5

Table A-2. Results of cluster analysis restricted to six groups.

County/Parish	Cluster/Group	County/Parish	Cluster/Group
Jefferson, Louisiana	6	St. Bernard, Louisiana	5
		St. Charles, Louisiana	5
Aransas, Texas	5	St. James, Louisiana	5
Ascension, Louisiana	5	St. John the Baptist, Louisiana	5
Baldwin, Alabama	5	St. Mary, Louisiana	5
Bay, Florida	5	Stone, Mississippi	5
Calhoun, Texas	5	Taylor, Florida	5
Cameron, Louisiana	5	Terrebonne, Louisiana	5
Chambers, Texas	5	Vermilion, Florida	5
Charlotte, Florida	5	Victoria, Texas	5
Citrus, Florida	5	Wakulla, Florida	5
De Soto, Florida	5	Waller, Texas	5
Dixie, Florida	5	Walton, Florida	5
Franklin, Florida	5	West Baton Rouge, Louisiana	5
Gulf, Florida	5	Willacy, Texas	5
Hancock, Mississippi	5		
Hardin, Texas	5	Brazoria, Texas	4
Hernando, Florida	5	Calcasieu, Louisiana	4
Iberia, Louisiana	5	Collier, Florida	4
Jackson, Mississippi	5	Escambia, Florida	4
Jackson, Texas	5	Fort Bend, Texas	4
Jefferson, Florida	5	Galveston, Texas	4
Kenedy, Texas	5	Harrison, Mississippi	4
Kleberg, Texas	5	Jefferson, Texas	4
Lafourche, Louisiana	5	Lafayette, Louisiana	4
Levy, Florida	5	Montgomery, Texas	4
Liberty, Texas	5	St. Tammany, Louisiana	4
Livingston, Louisiana	5		
Matagorda, Texas	5	Cameron, Texas	3
Monroe, Florida	5	Nueces, Texas	3
Okaloosa, Florida	5		
Orange, Texas	5	East Baton Rouge, Louisiana	2
Plaquemines, Louisiana	5	Mobile, Louisiana	2
Refugio, Texas	5		
San Patricio, Texas	5	Lee, Florida	1
Santa Rosa, Florida	5	Manatee, Florida	1
		Pasco, Florida	1
		Sarasota, Florida	1

Table A-3. Results of cluster analysis restricted to seven groups.

County/Parish	Cluster/Group	County/Parish	Cluster/Group
Aransas, Texas	7	Vermilion, Florida	7
Ascension, Louisiana	7	Victoria, Texas	7
Baldwin, Alabama	7	Wakulla, Florida	7
Calhoun, Texas	7	Waller, Texas	7
Cameron, Louisiana	7	Walton, Florida	7
Chambers, Texas	7	West Baton Rouge, Louisiana	7
Charlotte, Florida	7	Willacy, Texas	7
Citrus, Florida	7		
De Soto, Florida	7	Bay, Florida	6
Dixie, Florida	7	Brazoria, Texas	6
Franklin, Florida	7	Collier, Florida	6
Gulf, Florida	7	Harrison, Mississippi	6
Hancock, Mississippi	7	Jackson, Mississippi	6
Hardin, Texas	7	Monroe, Florida	6
Hernando, Florida	7	Montgomery, Texas	6
Iberia, Louisiana	7	Okaloosa, Florida	6
Jackson, Texas	7	St. Tammany, Louisiana	6
Jefferson, Florida	7		
Kenedy, Texas	7	Jefferson, Louisiana	5
Kleberg, Texas	7		
Lafourche, Louisiana	7	Cameron, Texas	4
Levy, Florida	7	Nueces, Texas	4
Liberty, Texas	7		
Livingston, Louisiana	7	Lee, Florida	3
Matagorda, Texas	7	Manatee, Florida	3
Orange, Texas	7	Pasco, Florida	3
Plaquemines, Louisiana	7	Sarasota, Florida	3
Refugio, Texas	7		
San Patricio, Texas	7	East Baton Rouge, Louisiana	2
Santa Rosa, Florida	7	Mobile, Louisiana	2
St. Bernard, Louisiana	7		
St. Charles, Louisiana	7	Calcasieu, Louisiana	1
St. James, Louisiana	7	Escambia, Florida	1
St. John the Baptist, Louisiana	7	Fort Bend, Texas	1
St. Mary, Louisiana	7	Galveston, Texas	1
Stone, Mississippi	7	Jefferson, Texas	1
Taylor, Florida	7	Lafayette, Louisiana	1
Terrebonne, Louisiana	7		

Table A-4. Results of cluster analysis restricted to eight groups.

County/Parish	Cluster/Group	County/Parish	Cluster/Group
Aransas, Texas	8	Vermilion, Florida	8
Ascension, Louisiana	8	Victoria, Texas	8
Baldwin, Alabama	8	Wakulla, Florida	8
Calhoun, Texas	8	Waller, Texas	8
Cameron, Louisiana	8	Walton, Florida	8
Chambers, Texas	8	West Baton Rouge, Louisiana	8
Charlotte, Florida	8	Willacy, Texas	8
Citrus, Florida	8		
De Soto, Florida	8	Calcasieu, Louisiana	7
Dixie, Florida	8	Escambia, Florida	7
Franklin, Florida	8	Fort Bend, Texas	7
Gulf, Florida	8	Galveston, Texas	7
Hancock, Mississippi	8	Jefferson, Texas	7
Hardin, Texas	8	Lafayette, Louisiana	7
Hernando, Florida	8		
Iberia, Louisiana	8	Bay, Florida	6
Jackson, Texas	8	Brazoria, Texas	6
Jefferson, Florida	8	Collier, Florida	6
Kenedy, Texas	8	Harrison, Mississippi	6
Kleberg, Texas	8	Jackson, Mississippi	6
Lafourche, Louisiana	8	Monroe, Florida	6
Levy, Florida	8	Montgomery, Texas	6
Liberty, Texas	8	Okaloosa, Florida	6
Livingston, Louisiana	8	St. Tammany, Louisiana	6
Matagorda, Texas	8		
Orange, Texas	8	Nueces, Texas	5
Plaquemines, Louisiana	8		
Refugio, Texas	8	Cameron, Texas	4
San Patricio, Texas	8		
Santa Rosa, Florida	8	Lee, Florida	3
St. Bernard, Louisiana	8	Manatee, Florida	3
St. Charles, Louisiana	8	Pasco, Florida	3
St. James, Louisiana	8	Sarasota, Florida	3
St. John the Baptist, Louisiana	8		
St. Mary, Louisiana	8	East Baton Rouge, Louisiana	2
Stone, Mississippi	8	Mobile, Louisiana	2
Taylor, Florida	8		
Terrebonne, Louisiana	8	Jefferson, Louisiana	1

Table A-5. Results of cluster analysis restricted to ten groups.

County/Parish	Cluster/Group	County/Parish	Cluster/Group
Aransas, Texas	10	Walton, Florida	10
Ascension, Louisiana	10	West Baton Rouge, Louisiana	10
Baldwin, Alabama	10	Willacy, Texas	10
Calhoun, Texas	10	Escambia, Florida	9
Cameron, Louisiana	10	Galveston, Texas	9
Chambers, Texas	10	Jefferson, Texas	9
De Soto, Florida	10		
Dixie, Florida	10	Charlotte, Florida	8
Franklin, Florida	10	Citrus, Florida	8
Gulf, Florida	10	Hernando, Florida	8
Hancock, Mississippi	10		
Hardin, Texas	10	Lee, Florida	7
Iberia, Louisiana	10	Manatee, Florida	7
Jackson, Mississippi	10	Pasco, Florida	7
Jefferson, Florida	10	Sarasota, Florida	7
Kenedy, Texas	10		
Kleberg, Texas	10	Nueces, Texas	6
Lafourche, Louisiana	10		
Levy, Florida	10	Jefferson, Louisiana	5
Liberty, Texas	10		
Livingston, Louisiana	10	Brazoria, Texas	4
Matagorda, Texas	10	Calcasieu, Louisiana	4
Orange, Texas	10	Fort Bend, Texas	4
Plaquemines, Louisiana	10	Jackson, Texas	4
Refugio, Texas	10	Lafayette, Louisiana	4
San Patricio, Texas	10	Montgomery, Texas	4
Santa Rosa, Florida	10	St. Tammany, Louisiana	4
St. Bernard, Louisiana	10	Terrebonne, Louisiana	4
St. Charles, Louisiana	10		
St. James, Louisiana	10	Bay, Florida	3
St. John the Baptist, Louisiana	10	Collier, Florida	3
St. Mary, Louisiana	10	Harrison, Mississippi	3
Stone, Mississippi	10	Monroe, Florida	3
Taylor, Florida	10	Okaloosa, Florida	3
Vermilion, Florida	10		
Victoria, Texas	10	East Baton Rouge, Louisiana	2
Wakulla, Florida	10	Mobile, Louisiana	2
Waller, Texas	10		
		Cameron, Texas	1

Table A-6. Results of final cluster analysis.

County/Parish	Cluster/Group	County/Parish	Cluster/Group
Lee, Florida	8	Dixie, Florida	2
Manatee, Florida	8	Franklin, Florida	2
Pasco, Florida	8	Gulf, Florida	2
Sarasota, Florida	8	Hancock, Mississippi	2
East Baton Rouge, Louisiana	7	Hardin, Texas	2
Jefferson, Louisiana	7	Iberia, Louisiana	2
Mobile, Alabama	7	Jackson, Texas	2
Cameron, Texas	6	Jefferson, Florida	2
Nueces, Texas	6	Kenedy, Texas	2
		Lafourche, Louisiana	2
Brazoria, Texas	5	Levy, Florida	2
Calcasieu, Louisiana	5	Liberty, Texas	2
Collier, Florida	5	Livingston, Louisiana	2
Escambia, Florida	5	Matagorda, Texas	2
Fort Bend, Texas	5	Orange, Texas	2
Galveston, Texas	5	Plaquemines, Louisiana	2
Harrison, Mississippi	5	Refugio, Texas	2
Jefferson, Texas	5	Santa Rosa, Florida	2
Lafayette, Louisiana	5	St. Bernard, Louisiana	2
Montgomery, Texas	5	St. Charles, Louisiana	2
St. Tammany, Louisiana	5	St. James, Louisiana	2
		St. John the Baptist	2
Bay, Florida	4	St. Mary, Louisiana	2
Jackson, Mississippi	4	Stone, Mississippi	2
Okaloosa, Florida	4	Taylor, Florida	2
		Terrebonne, Louisiana	2
Baldwin, Alabama	3	Vermilion, Florida	2
Charlotte, Florida	3	Wakulla, Florida	2
Citrus, Florida	3	Waller, Texas	2
Hernando, Florida	3	Walton, Florida	2
Monroe, Florida	3	West Baton Rouge	2
		Willacy, Texas	2
Aransas, Texas	2		
Ascension, Louisiana	2	Kleberg, Texas	1
Calhoun, Texas	2	San Patricio, Texas	1
Cameron, Louisiana	2	Victoria, Texas	1
Chambers, Texas	2		
De Soto, Florida	2		

tool for this research consisted of "concentrated site visits," in which the research team from the Bureau of Applied Research in Anthropology, University of Arizona, conducted rapid tool for this research consisted of "concentrated site visits," in which the research team from the Bureau of Applied Research in Anthropology, University of Arizona, conducted rapid appraisals of the study areas using non-structured and semi-structured discussions with residents of the study communities. Roughly 600 discussions were conducted, ranging from brief interactions to day-long family visits. The field research procedures are outlined below.

A.3.1 Scoping

The first step of the fieldwork portion of the rapid ethnographic assessment was scoping visits to each of the study communities. These visits took place in June, 1997 for south Louisiana and Alabama and November 1997 for Texas. The purpose of the scoping was to visit communities that had been identified through documents searches and demographic analyses, meet with select community representatives to discern willingness to participate in the study, and select the case study sites. Two communities within each study area were selected. These six communities represented a spectrum of involvement in OCS-related activity that ranged from very high to very low.

A.3.2 Pre-field Procedures

Prior to the field work, efforts focused on collecting and archiving documents and databases. Documents were obtained from the University of Arizona library, national locations via interlibrary loan, and local study area university and public libraries. Reference information and document summaries were written and entered into an electronic bibliography.

The researchers developed and tested a database to archive both qualitative and quantitative data. The structure of the database was established prior to the field visits. A database manager established procedures for formatting electronic versions of field notes for entry into the database.

A.3.3 Field Procedures

The field visits were carried out according to a logistics plan. The plan identified the types of participants from whom participation would be sought, and developed an approach for the assessment and collection of archival and current documents, including newspaper articles. Concentrated field visits were conducted in south Louisiana during October and November 1997; in the Coastal Bend area of Texas in February and March 1998; and in the Mobile Bay area of Alabama in May and June 1998.

Researchers identified the types of individuals who would have information relevant to the study and developed a matrix targeting those individuals. Phone books and newspaper articles that were collected during the scoping visits and Internet sites (e.g., Louisiana Department of Education website) were used to pinpoint specific individuals. Where possible, individuals

were contacted prior to the site visits and asked to participate in the study. Upon arrival in the communities, the researchers visited local officials to announce the beginning of the study. In two cases, local newspaper reporters wrote articles describing the study to residents. Researchers also visited local gathering places to talk with residents. Through guided discussions, researchers gathered local perspectives on the communities, occupations, education, and change over time. They also learned about documents, databases, and other sources of information and received the names of individuals who could provide additional information. This technique, often referred to as "snowballing," is an effective means of gathering targeted information in a short period of time.

While in the field, researchers visited libraries, agency offices, and archives to gather documents. They also met with database managers to collect numeric data relevant to the study. Using laptop computers and xerox machines, the ethnographers gathered as much information as possible, in whatever format available. Data on educational enrollments, for example, were copied from library-held volumes of the Louisiana Department of Education dating to 1945, entered electronically at the research support office of Nicholls State University in Thibodaux, La., and then sent to the University of Arizona via e-mail from the computing support center of Bishop State Community College in Mobile, Ala. Where it was not possible to obtain copies of databases and documents, the researchers conducted infield analyses.

In an ethnographic assessment, data collection and analysis occur simultaneously. Thus, while still in the field, researchers met on regular intervals, every 2 or 3 days, to discuss findings, share contacts, and identify new areas to explore. Paper and electronic copies of field notes, insights, and observations were made. Discussion notes are identified by location, interviewer, and a code number representing the respondent.

A.3.4 Post-field Procedures

The information sharing and analysis begun in the field continued in the project offices in the periods between field visits. Documents were reviewed. Quantitative data were entered into or transferred to electronic databases using Microsoft Excel. The findings were drafted as sections of the report and circulated among the project team. The project's regional database was used to concextualize the local findings. The project's social historian integrated additional historical perspective.

A.4 Regional Trend Analysis

A.4.1 Variable Selection Process

A four-step process was used to select the socioeconomic variables for analysis. First, variables identified as typically important for socioeconomic analysis were identified following the procedures of Leistritz and Murdock (1981) and review of numerous socioeconomic impact studies (e.g., Laska, 1993; Seydlitz et al., 1995b; Gramling and

Brabant, 1984; Seydlitz and Laska, 1994; Tolbert et al., 1995; Lamphear et al., 1986; Stinson, 1982). This step ensured that at least the most important and relevant variables would be examined; 102 variables were identified in this step. In step 2, the variables identified in the literature as being important indicators of social, fiscal, and economic change were reviewed by all members of the project team and the SRB. This step helped to ensure that the more important variables would be identified and other relevant socioeconomic indicators suggested. In addition, step 2 served to establish consensus-based selection criteria. In step 3, a preliminary assessment of data availability and cost was conducted to determine whether or not data were available and could be obtained at reasonable costs. In step 4, viable variables were divided into two categories -- those readily available and considered essential to the analysis (e.g., population and earnings) and others.

Five criteria were used to screen the variables into the two categories:

1. Is the variable appropriate for addressing the case study issues (economic and social change; community history/landscapes; labor processes; and education services)?

2. How complex must the analysis be to determine whether or not oil and gas activities caused a significant change in the value of the variable (e.g., will quantitative analysis require complex nonlinear systems of simultaneous equations or can relatively simple linear single equations be used)?

3. Is the variable typically analyzed in a socioeconomic analysis (i.e., is it an important indicator of socioeconomic structure)?

4. Are data available for analysis of the variable?

5. Does the research team have sufficient resources to conduct an analysis of the variable?

A sixth factor was considered in the screening process -- whether the variable had been analyzed in previous MMS-sponsored studies. However, this factor but was not used as a rigid criteria.

The screening process identified 34 variables as essential for analysis. An additional 21 variables were selected for study, bringing the total number of variables to be studied to 55. (The final list of variables included the 34 essential variables and an additional 21 variables selected from the 68 variables remaining on the master list of 102 after the essential variable had been identified.) The 21 additional variables were selected after consultation with MMS, review of previous socioeconomic impact studies, and consideration of data accessibility. One variable was subsequently dropped because of lack of data availability. These data were obtained from public sources, assembled as data sets using the software Excel, and then analyzed for trends and causality. A subset of the variables was used to describe economic and social change in Section 4.

A.4.2 Methodology for Examining Trends and Validating Analyses

This section of the appendix presents a discussion of the various statistical approaches used to analyze the potential ramifications of Gulf of Mexico OCS oil and gas activities on the social and economic characteristics of the selected study counties and parishes. The discussion is restricted to providing a summary of the basic aspects of the various methodologies used for analyses. It is not practical to discuss, in detail, each method used for analysis.

Moreover, the quantitative approach adopted for this study was to extract as much information as possible about the long and short-run potential ramifications of Gulf of Mexico OCS oil and gas activities on the social and economic characteristics of the study areas. Two basic frameworks were possible: (1) a socio-economic systems approach, and (2) a time series approach.

The socio-economic systems approach requires rigorous specifications of mathematical functions that satisfy requirement mathematical or regularity conditions consistent with economic theory. For example, an economic framework for assessing the part- and full-time labor employment in manufacturing would require the specification of a profit function. The profit function would specify profits as a function of input and output prices and other factors deemed to be fixed but affecting profits. The profit function would have to be linearly homogeneous in input and output prices. Other conditions involving first and second partial derivatives would also have to be satisfied. The demand for labor would be estimated by estimating a system of factor demand (e.g., labor, energy, materials, and other inputs) and output supply equations (e.g., the supply of manufactured products). Following the estimation, all the regularity conditions would have to be statistically assessed. In empirical work, it has often been the case that the necessary regularity conditions are not satisfied, particularly when examining aggregate demand and supply (e.g., the demand for labor at the county or parish level). With a rigorous economic framework, it would also be necessary to statistically examine whether or not the behavior of producers was consistent with profit maximizing behavior, cost minimizing behavior, revenue maximizing behavior, or some other behavior. It is not unusual for a researcher using a rigorous economic approach to spend one or two years examining the demand for labor in an industry.

Given the increasing use of time series methods to examine possible causal relationships or interactions (e.g., changes in variable y are influenced by changes in variable x) and the fact that less theoretical economic conditions are necessary with time series methods, this study applied a variety of conventional time series approaches to examine the possible ramifications of Gulf of Mexico OCS oil and gas activities. The time series approaches permit a more thorough and direct assessment of possible relationships. The theoretical economic specifications, however, can also be estimated and examined using the various time series approaches, but it has typically been determined that many of the necessary regularity conditions are not satisfied. Also, the more rigorous theoretical models typically are not parsimonious and have lower statistical power or precision for predictions and assessing causal interactions.

The need for the application of the various time series approaches was based on the fact that many of the conventional economic models using time series suffer from what is termed spurious regression. When examining possible relationships between two or more time series type variables, it is possible to conclude they are statistically related even when they are not. This is typical when analyzing aggregate data such as county-level personal income or county-level employment; in fact, Banerjee et al. (1993) suggests that the use of a static regression (regression using the original values of the variables without adjustment for non-stationarity) to analyze possible relationships of conventional economic type data does not make sense. It does not make sense because aggregate time series data (e.g., personal income for a county) are usually not stationary (i.e., the series does not have a constant mean or constant variance over time). If two series are not stationary, but can be made stationary by taking first differences (i.e., if the series $z_t = y_t - y_{t-1}$ equals a constant mean and has a constant variance, the series is stationary) and a linear combination of the series is stationary, it is possible to obtain meaningful results via regressing the differenced y series on the differenced x series. An alternative way to understand the problem of spurious regression is to consider two time series that are actually unrelated but share a common or similar trend caused by completely different events affecting each variable, a regression of y on x will yield what appear to be statistically significant results with high explanatory power (high coefficient of multiple determination or R-squared values). The variable y, in actuality, is completely unrelated to x, but since regression detects correlations, the results of the regression will appear to be significant.

In this study, a wide variety of time series approaches were used to examine the potential consequences of Gulf of Mexico OCS oil and natural gas activities on the social and economic characteristics of the study areas. A general structural or chronological summary of the various methods are as follows: (1) assessment of whether or not trends in the data were deterministic or stochastic; (2) assessment of whether or not the statistical specifications (relationships) relating the social and economic characteristics to the Gulf of Mexico OCS oil and gas activity indicators are co-integrated; (3) examination of whether or not changes in the social and economic characteristics can be statistically explained by changes in the oil and natural gas indicators; and (4) determination of whether or not possible statistical relationships changed over time (i.e., have there been structural changes over time or are the relationships statistically stable or unchanging over time).

All analyses conducted in support of this study were done using the following software programs: (1) Time Series Processor (TSP) (Hall, 1996); (2) Shazam (White, 1997); (3) Regression Analysis and Times Series (RATS) (Doan, 1996); (4) Co-integration Analysis and Time Series (CATS) (Hansen and Juselius, 1998); (5) SCA Statistical System (UTS and Extended UTS) (Liu et al., 1994); (6) LIMDEP (Greene, 1997); (7) Forecast Master Plus (Goodrich, 1989); and (8) SPSS (Norusis, 1993). Although the number of software packages was quite large, it was necessary to use all packages because each analytical program has options or routines that were either not available in the other packages or performed better than those routines available in the other packages.

A.4.2.1 Deterministic or Stochastic Trends and Unit Root Tests

As discussed in the previous section, a major concern of regression analysis is stationarity or whether or not the mean and variance are constant over time. Alternatively, if regression analysis is to provide appropriate estimates and data contain trends, it is important to standardize the data for trends or to remove the trend nature of the data. There are two basic approaches to deal with data that have trends. If a trend is purely deterministic (i.e., perfectly predictable), the potential influence of trends may be removed from the data by adding a trend component to the regression model or subtracting a function of time from all the variables used in a regression. The trend, however, must be deterministic. An alternative approach is to determine if the trend is stochastic and follows a stationary process. Formally, there are two trend type models: (1) trend stationary process (TSP) and (2) difference stationary process (DSP).

If the trend is deterministic or follows what is called a trend stationary process (TSP), the data may be easily detrended by simply adding a trend variable to a regression relating y and x (i.e., $y = f(x,t)$ where y is the dependent variable, x is an independent variable, and t is time). If the trend is stochastic or follows a difference stationary process (DSP), the trend may be eliminated by making the data stationary in first differences (i.e., $y_t - y_{t-1}$ and $x_t - x_{t-1}$). The determination of whether or not a time series belongs to a TSP or a DSP may be easily accomplished by estimating the following model

$$y_t = \alpha + \rho\, y_{t-1} + \beta\, t + \varepsilon_t$$

and testing whether or not the parameters are of certain values. If $\beta = 0$ and $\rho = 1$, the data are said to contain unit roots and follow the DSP structure. If $|\rho| < 1$, the data follow the TSP structure. Data also may, however, contain both a deterministic and stochastic component. In this case, both β and ρ are non-zero. The above model may also be modified to deal with longer periods of lagged values (e.g., y_{t-2}). However, the critical issue is whether or not the series are stationary. In this case, if the data series have unit roots or the series is made stationary with first order differences (i.e., $\rho = 1.0$), the series are said to be integrated of order one.

In order to test for unit roots, augmented Dickey-Fuller (1981) tests are used. These are statistical test which explicitly recognized the non-normality of the model specification. Alternatively, conventional tests of restrictions such as $\rho = 1$ and $\beta = 0$ do not have the standard normal, t, and F distributions.

In addition to conducting unit root tests to determine whether or not the trend is deterministic or stochastic and whether or not a series is stationary, the unit root tests provide information about whether or not an unexpected shock or change affecting the value of the variable being examined (e.g., personal income) is permanent. If a series has a unit root, the shock is said to be permanent. If on the other hand the trend is deterministic or can be adequately described by a trend stationary process, the effect of any shocks will die out or dissipate over time.

In the analyses, all social, economic, and oil and gas variables were tested for the presence of unit roots or non-stationarity as well as whether or not a deterministic or stochastic trend characterized the data series. Overall, all variables were found to be non-stationary but could be made stationary by taking first differences of the data series. Deterministic trends characterized some of the variables but most social and economic characteristics exhibited stochastic trends. In addition, it appears that most shocks that affected the social and economic characteristics of the study areas were permanent.

A.4.1.2 Co-integration Analysis

Cointegration has become a very important topic in time series analysis. If two or more series are non-stationary, but can be made stationary by taking first differences, any regression of the transformed stationary dependent variable series against the transformed stationary independent variables will be biased and spurious unless the regression model is integrated of order zero or is stationary in original values. A series is integrated of order N if the series becomes stationary after taking N differences of the series. For example, a series is said to be integrated of order one if stationarity is achieved by taking first differences (i.e., $Y_t - Y_{t-1} = Z_t$ is stationary if the coefficient for Y_{t-1} equals one). If the linear combination of Zs and Xs (where X is a first differenced series and is stationary) and there is some parameter, β, that yields a stationary series (e.g., $Z - \beta X$), then Y and X are said to be cointegrated. This means that the regression $Z_t = \beta X_t + u_t$ makes sense because Z and X do not drift too far apart from each other over time. The term u is an error term and is integrated of order zero; it is stationary in its mean and variance.

If two or more series are cointegrated, there exists a long-run, stable equilibrium between the series. In this study, cointegration analyses were conducted to determine whether or not trends in the selected study area social and economic characteristics were related to trends in the same variables for the United States, and whether or not there existed long-run, stable relationships between the social and economic characteristics of the study areas and Gulf of Mexico OCS oil and natural gas activities. The cointegration analyses were also conducted to ascertain whether or not the potential ramifications of OCS oil and gas activities on the social and economic characteristics could even be assessed with conventional regression analysis.

The hypothesis of no cointegration between the OCS oil and gas indicators and the social and economic indicators is consistent with numerous hypotheses about macroeconomic variables and unexpected changes in world oil prices and related production activities. Numerous researchers have shown that many macroeconomic variables (e.g., interest rates, gross national product, and money supply) do not have long-run relationships with U.S. and world oil prices and production levels (see, for example, Hamilton (1983, 1985); Juselius (1992) ; and Hansen and Johansen (1993)). In effect, these researchers have argued that oil prices and production levels are weakly exogenous variables, and as such, have only transitory impacts on macroeconomic variables; therefore, oil prices and production levels should not be expected to have a long-run, stable, and equilibrium relationship with various macroeconomic variables.

Rejection of cointegration implies that there are no stable, long-run equilibrium or common relationships between OCS oil and gas activities and the social and economic structures of the various study communities. Rejection of cointegration, however, does not imply that OCS oil and gas activities have had no effects on the social structure and economies of the GOM region. The influence of OCS oil and gas activities instead may be highly variable and changing in magnitude over time.

Two statistical tests were used to test for cointegration. The Engle-Granger test (1987) which allows for up to six cointegrating variables was used, and the trace test of Johansen and Juselius (1990), which permits a broader examination of cointegration was also used to test for cointegration. The Engle-Granger test is actually an augmented Dickey-Fuller (1979) test on the residuals obtained from the regression. These tests simply assess whether or not the residuals obtained from regressing a stationary series against other stationary series are stationary. If the residuals are stationary, the series are cointegrated.

Overall, there were very few common trends between the United States and selected study areas. These are described in detail in Section 5. There also were no long-run, stable relationships between the social and economic indicators and the Gulf of Mexico oil and gas industry indicators. The implication of a finding of no cointegration is that conventional regressions relating the social and economic indicators, without transformations or with transformations, to the oil and gas indicators yield little useful information. The estimated regressions are spurious. Another important implication, however, is that the potential relationships are short-run, highly dynamic, unstable, and changing over time. Even though shocks affecting the social and economic indicators are mostly permanent, there are substantially transitory changes over time. Cointegration tests were conducted using the programs TSP (Hall 1996) and Co-integration Analysis and Time Series (CATS) (Hansen and Juselius 1998).

A.4.1.3 Causality, Dynamics, and Vector Autoregression Analysis: The Dynamic Relationships

Although no long-run, stable, equilibrium was found to characterize the possible relationships between OCS oil and gas activities in the GOM region and various social and economic indicators, it is possible that Gulf of Mexico OCS oil and natural gas activities have had substantial, but unstable, impacts on the social and economic characteristics of the study areas. Assessing the possibility of short-run or non-constant, time-dependent changes requires first an examination of causality (i.e., do changes in x cause changes in y) and subsequently an evaluation of impulse response functions. Impulse response functions provide an indication of how an unexpected unit change or shock in a variable at some given point in time will affect or change the same variable or another variable at some later point in time (e.g., if 2 years ago the OCS price of crude and condensate increased by $1.00, what would be the expected change in oil and gas earnings in the current time period). Causality testing and the derivation and examination of impulse response values are accomplished by estimating vector autoregression (VAR) models. Causality is tested with the F-statistic of restrictions consistent

with no causality (block exogeneity tests) or Granger (1969) causality tests. Impulse response functions are evaluated relative to 15 years.

The vector autoregression or VAR model was offered by Sims (1980) as one approach to deal with non-stationary series and avoid the problems associated with estimating complex systems of dynamic equations. If we consider the possible relationship between the rate of change in consumption (y) and the rate of change in the price of consumer goods (p), a VAR model could be specified as follows:

$$y_t = \alpha_{11}\, y_{t-1} + \alpha_{12}\, p_{t-1} + \varepsilon_{1t}$$
$$p_t = \alpha_{21}\, y_{t-1} + \alpha_{22}\, p_{t-1} + \varepsilon_{2t}$$

where the αs are parameters to be estimated and the εs are normally distributed random errors. Additional x or independent variables may also be added to the equation.

After estimation, the roots of the VAR model are determined and examined to determine whether or not the relationship is stable. If the absolute value of the characteristic roots are less than one, the VAR model is convergent and stable (Maddala 1992). Subsequently, impulse response functions are obtained by expressing the consumption and prices as functions of the current and lagged values of the error terms and the estimate coefficients. The impulse response functions indicate the path by which the variables will return to an equilibrium given a shock or unforeseen change that affects the value of the error terms. If the characteristic roots are greater than one, however, the system is quite explosive and may deviated considerably from an equilibrium time path. The mathematics of the derivation of the characteristic roots are omitted from the appendix; they are described in detail, however, in Maddala (1992) and in Hamilton (1994).

In the present study, it was determined that most of the characteristic roots were less than one in value and declined to nearly zero within 15 years. Actually, most of the roots were nearly zero after 7 years, and thus, indicated that the influence of shocks affecting OCS oil and gas activities on the social and economic characteristics would die out after approximately 7 years.

The VAR model not only permits an assessment of the underlying dynamics of change and the potential duration of effects but also permits an assessment of causality. That is, does x cause y, y cause x, or x cause y and y cause x? The term causality, however, is somewhat confusing. Testing for causality is equivalent to testing whether or not a variable is exogenous or endogenous, or precedes the value of another variable. For example, testing whether or not changes in the per capita disposable income in a current month were statistically related to changes in the sales value of OCS natural gas last month or in earlier periods is a test of causality. The acceptance of causality does not necessarily mean that changes in the value of one variable caused the value of another variable to change; it simply means that two variable are statistically related in a dynamic sense or over time. In addition to the dynamic aspects, causality tests are conditional on the functional form used to relate variables; it is possible to accept causality with one function form and reject causality with another functional form.

Testing for causality is a simple matter of specifying each social and economic characteristic as a function of each OCS oil and gas indicator within a bivariate specification (one y and one x). One exogenous variable, the constant or intercept term, is also included in each specification; other exogenous variable may also be included in the specification. In order to examine causality in the current study, it was necessary to specify and estimate approximately 2,940 equations–one for each variable (49), study area (10), and OCS oil and gas indicator (6).

Causality is tested by a simple F-test of restrictions. It also may be tested using the likelihood ratio test, the Wald test, or the Lagrangean multiplier test. That is, the VAR model is estimated allowing all parameters to vary and with all parameters of the variable thought to influence the dependent variable being restricted to zero. For example, the test of whether or not personal income was caused or influenced by the price of crude oil requires estimating the statistical model relating personal income to lagged personal income and lagged prices of crude oil without any restrictions on the coefficients for the prices. Next, the equation is estimated with the coefficients for crude prices restricted to zero. From the two estimates, appropriate error sum of squares and F-statistics may be derived. If we accept the null hypothesis that all price coefficients are zero, we conclude that the price of crude oil did not influence or cause personal income. The various lags of the dependent variable, personal income, are included to reduce the likelihood of falsely rejecting the null hypothesis of no causality.

Prior to conducting the various causality tests, the appropriate lag length must be selected. This was accomplished by estimating each equation and determining that which best maximized the value of the log-likelihood function and was suggested by Akaike's information criterion (i.e., a parameter that allows one to determine the most appropriate model). These lags were selected for the VAR models. Determination of the lag lengths, estimation of the VAR models, and testing of causality were performed using TSP (Hall 1996).

Overall, the results indicated that the sales volumes and prices of Gulf of Mexico OCS crude and natural gas did not substantially affected the social and economic characteristics of the various study areas. When causality was examined using the sales values of Gulf of Mexico OCS crude and natural gas, however, considerable causality was determined to exist. That is, the social and economic characteristics of the various study areas, particularly Lafourche and Terrebonne parishes and San Patricio County, was found to be highly and significantly influenced by the sales values of OCS crude and natural gas.

A.4.1.4 Interventions and Structural Change: Tests for Interventions and Structural Changes

A series of structural changes tests (F-tests, Wald, Harvey-Collier, Chow, Cusum, and Cusum-squared tests) were conducted to determine the presence of interventions, major structural changes in trends, outliers, and instability or varying relationships over time (i.e., a statistical relationship is deemed to be unstable if the coefficient relating a dependent variable (e.g.,

manufacturing employment) to an independent variable (e.g., the price of OCS crude) is not constant or changing over time. An intervention is any random shock or change that forces the pattern of data over time to change from its normal behavior. Interventions include several types: (1) additive outliers, (2) innovational outliers, (3) permanent level shifts, (4) transient level shifts, and (5) variance changes.

Only innovational outliers and temporary changes were investigated in this study; the other types of interventions are not likely to characterize the data reflecting the social and economic structures of the Gulf of Mexico study areas. Technically and relative to time series analysis, an innovation is the component of the data (e.g., gasoline consumption between 1940 and 1946 for a series containing consumption from 1930 through 1990) that is uncorrelated with the past history. Alternatively, it may be defined as a random shock that occurs at time t and affects the value of some variable at time t and all later periods; the latter effects, however, may quickly die out and be negligible. For purposes of comparison, an additive outlier would be some change that occurred at time t and affected the value a variable only during time period t. Level shifts were not examined because they were unlikely to characterize any of the data patterns; a level shift represents a sudden increase or decrease in the value of a variable but no change from normal behavior or over the two trends. A temporary or transient change would be an event having an initial impact but whose effect exponentially decays over time.

There is no "fool-proof" way to detect or determine an intervention. Typically, knowledge of the variables being examined or an examination of a time series plot provide initial detection of an intervention. In the case of a level shift, examination of a time series plot usually reveals the presence of an intervention. Innovational shifts, however, are considerably more complicated to detect. The presence of interventions were examined via analysis of changing coefficients over time, dummy variables for the slope coefficients (changing responses), and examination of various residuals for the presence of outliers. Cusum and Cusum-squared tests and break or change point tests were also widely employed to detect the presence of interventions.

Since many of the oil and gas indicators are highly collinear (i.e., highly correlated with each other), structural changes and interventions were examined using various dynamic regression models with a social or economic indicator being a dependent variable and only one of the oil or gas indicators being a right-hand side or exogenous variable. The dynamic or recursive regression permits an assessment of how the relationships between a social or economic indicator and an oil or gas indicator change over time (e.g., the coefficient relating population and oil production might be .005 between 1969 and 1980 but then change to .09 between 1981 and 1986).

Recursive residuals were initially proposed by Brown et al. (1975) for testing the stability of regression relationships. With this method, regressions based on consecutive groupings of time periods are run. Then, one period ahead forecasts of the dependent variable are made using the value of the independent variable one-period ahead. A prediction error is obtained.

This is done until regressions have been made over all time periods or the last time period. If there are k explanatory or independent variables and one constant, the minimum number of observations required for the first estimation is k+2, which allows at least one degree of freedom. The recursive residuals provide one possible indication of stability. A simple t-test that the mean of the recursive residual is used to determine whether or not a relationship is statistically stable; if the t-statistical is greater than or equal to critical t-statistic, we conclude the relationship is not stable. In actuality, the Brown et al. test actually tests whether or not the estimated coefficient vector is the same in every period.

Brown et al. also suggest that the cumulative sums (CUSUM) and cumulative sums of squares (CUSUM-squared) of the recursive residuals offer more powerful tests of instability. The two tests are discussed in Brown et al. (1975) and Greene (1997). The CUSUM test is a test of whether or not the cumulative sum of the residuals is within or outside a confidence interval corresponding to a given level of significance. The confidence interval is $[K, \pm a(T-K)^{1/2}]$ and $[T, \pm 3a(T-K)^{1/2}]$, where K is the number of explanatory variables, T is the number of observations, and a is a value that corresponds to the selected statistical level of significance. The CUSUM-squared test is similar to the CUSUM test but has difference bounds or confidence intervals.

A third test is that proposed by Harvey and Collier (1977). The Harvey-Collier test is a simple t-test that the mean of the recursive residuals is zero. In contrast to the Brown et al. test, the Harvey-Collier test is a direct test that the recursive residual is normally distributed, has a mean of zero, and a variance equal to the residual variance divided by the degrees of freedom.

Unfortunately, numerous studies have shown that the power of the stability tests are quite variable and typically quite low. Because of these potential problems, all tests were conducted. Tests were made using Shazam (White 1997) which has an extensive number of algorithms for testing structural stability or constancy of the regression coefficients over time.

Not surprising, the tests tended to reject stable relationships between the social and economic characteristics of the study areas and Gulf of Mexico OCS oil and natural gas activity indicators. Previous work by researchers around the world have shown that economies that are possibly highly dependent upon energy production and sales will likely be highly unstable and highly sensitive to events that affect the production and sales of energy (e.g., Bohi 1984, Green and Leiby 1993, Griffen and Steele 1980, and Marcus 1992). Very few stable relationships between the social and economic indicators and the OCS oil and gas indicators were found from the analyses of stability.

The fact that the relationships are unstable or changing over time does not, however, imply that OCS oil and gas activities have had not influence on the social and economic characteristics. In fact, many relationships were found to exist during different periods of time. For some periods of the time, the relationships were high significant and positive. During other periods, the relationships were negative and statistically significant. Yet in other

periods, relationships between the social and economic indicators and the oil and gas indicators were not statistically significant. Last, even during periods when relationships were consistently positive or negative and significant, the magnitude of the relationship was changing (e.g., the statistical results might imply that personal income would increase by one amount in some years as the sales value of OCS crude increased but in other years the correspondence or rate of increase would be considerably lower). The fact that the relationships were highly unstable implies that the relationships between the social and economic characteristics and the OCS oil and gas indicators have changed over time, and we cannot easily predict how changes in OCS oil and gas activities will affect the social and economic characteristics of the selected study areas.

Table B-1. Summary of selected variables: Alabama.

Variable	1970	1975	1980	1985	1990	1995
Changes in Demographics						
Total Population	3,449,846	3,737,204	3,918,533	3,991,569	4,090,154	4,287,178
Age						
0-9	683,336	NA	610,562	NA	576,738	NA
10-19	713,573	NA	705,502	NA	618,990	NA
20-29	491,491	NA	676,647	NA	617,805	NA
30-44	573,989	NA	713,006	NA	918,850	NA
45-59	541,489	NA	579,057	NA	603,674	NA
60+	475,287	NA	609,114	NA	704,530	NA
Race						
White	2,535,823	NA	2,873,289	NA	2,975,247	NA
Black	903,035	NA	996,283	NA	1,019,743	NA
Changes in Industry Structure						
Total Employment	1,412,914	1,593,920	1,724,179	1,867,148	2,075,006	2,272,111
Agricultural Services	102,395	97,549	91,512	80,427	79,595	78,582
Mining	8,565	14,132	16,960	14,039	13,891	12,312
Manufacturing	331,741	348,999	374,142	372,833	391,480	396,206
Military	69,170	53,737	56,723	60,234	54,715	45,784
Number of Wage/Salary Jobs						
Total Earnings (thousands of $1998)	$42,957,369	$59,280,210	$66,106,622	$71,206,300	$81,259,127	$91,962,356
Agricultural Services	$1,332,916	$1,734,391	$1,209,393	$930,836	$1,741,707	$1,352,716
Mining	$366,605	$843,564	$1,106,830	$791,776	$731,257	$675,222
Manufacturing	$9,761,916	$12,040,582	$13,237,370	$12,936,529	$13,410,516	$14,127,581
Total Establishments	NA	NA	65,880	80,279	86,537	$ 96,053.0
Agricultural Services	NA	NA	641	773	1,049	$ 1,528.0
Mining	NA	NA	316	328	330	$ 308.0
Manufacturing	NA	NA	4,958	5,682	6,198	$ 6,672.0
Changes in Personal Economy						
Total Mean Household Income ($1998)	$30,086	NA	$34,045	NA	$33,361	NA
White Mean Household Income	$34,519	NA	$37,143	NA	$37,754	NA
Black Mean Household Income	$18,284	NA	$20,453	NA	$22,592	NA
Per Capita Income ($1998)	$12,454	$15,864	$16,854	$17,843	$19,863	$21,450
Average Wage Per Job ($1998)	$23,391	$26,806	$26,403	$26,244	$26,089	$26,409
Changes in a Social Indicator						
Suicide Rate per 100,000 Population	9.0	10.3	11.2	10.7	12.7	13.2

NA - Not Available
Source: See Table 4-1.

Table B-2. Summary of selected variables: Florida.

Variable	1970	1975	1980	1985	1990	1995
Changes in Demographics						
Total Population	6,845,353	8,541,660	9,839,835	11,351,120	13,018,036	14,181,147
Age						
0-9	1,106,893	NA	1,191,758	NA	1,658,092	NA
10-19	1,219,790	NA	1,496,356	NA	1,543,966	NA
20-29	899,613	NA	1,551,275	NA	1,898,619	NA
30-44	1,105,532	NA	1,710,341	NA	2,891,568	NA
45-59	1,109,324	NA	1,544,369	NA	1,895,749	NA
60+	1,348,291	NA	2,252,225	NA	3,049,932	NA
Race						
White	5,723,988	NA	8,184,855	NA	10,755,698	NA
Black	1,041,966	NA	1,343,134	NA	1,755,958	NA
Changes in Industry Structure						
Total Employment	2,966,073	3,675,505	4,695,116	5,807,437	6,786,799	7,544,762
Agricultural Services	133,581	154,980	190,772	194,907	210,853	230,080
Mining	8,530	10,581	13,979	16,742	16,211	13,778
Manufacturing	328,884	349,114	466,317	530,745	533,872	506,606
Military	133,683	119,454	120,956	134,518	147,900	110,826
Number of Wage/Salary Jobs	2,559,842	3,115,691	3,966,023	4,830,354	5,771,536	6,443,549
Total Earnings (thousands of $1998)	$ 81,234,857	$ 100,822,787	$ 122,297,268	$ 152,443,334	$ 187,549,932	$ 210,282,736
Agricultural Services	$ 3,170,478	$ 4,206,715	$ 4,637,164	$ 4,291,911	$ 4,738,400	$ 4,272,062
Mining	$ 394,529	$ 747,257	$ 1,343,195	$ 1,062,720	$ 429,592	$ 383,156
Manufacturing	$ 11,057,210	$ 11,901,685	$ 15,671,296	$ 19,337,400	$ 20,129,057	$ 19,523,361
Total Establishments	NA	NA	217,609	309,328	361,330	398,232
Agricultural Services	NA	NA	2,855	4,497	6,240	8,363
Mining	NA	NA	252	346	334	283
Manufacturing	NA	NA	11,178	14,477	16,151	16,680
Changes in Personal Economy						
Total Mean Household Income ($1998)	$ 34,817	NA	$ 36,522	NA	$ 39,326	NA
White Mean Household Income	$ 37,302	NA	$ 38,499	NA	$ 41,305	NA
Black Mean Household Income	$ 21,192	NA	$ 21,564	NA	$ 24,746	NA
Per Capita Income ($1998)	$ 3,988	$ 5,868	$ 9,957	$ 14,440	$ 19,185	$ 23,139
Average Wage Per Job ($1998)	$ 26,437	$ 26,364	$ 24,696	$ 25,891	$ 26,642	$ 26,440
Changes in a Social Indicator						
Suicide Rate per 100,000 Population	15.0	17.6	15.4	16.3	15.9	15.1

NA- Not Available

Source: See Table 4-1.

Table B-3. Summary of selected variables: Louisiana.

Variable	1970	1975	1980	1985	1990	1995
Changes in Demographics						
Total Population	3,650,209	3,886,963	4,223,101	4,408,113	4,219,111	4,328,552
Age						
0-9	745,770	NA	707,499	NA	693,240	NA
10-19	786,627	NA	797,952	NA	673,359	NA
20-29	532,939	NA	789,008	NA	663,029	NA
30-44	592,510	NA	762,246	NA	970,243	NA
45-59	534,629	NA	583,184	NA	581,315	NA
60+	448,831	NA	566,011	NA	638,787	NA
Race						
White	2,545,953	NA	2,915,310	NA	2,840,018	NA
Black	1,085,227	NA	1,238,472	NA	1,298,662	NA
Changes in Industry Structure						
Total Employment	1,429,465	1,640,864	1,967,762	2,019,455	2,017,625	2,205,969
Agricultural Services	78,471	71,781	71,438	64,671	65,502	60,951
Mining	55,659	64,909	101,085	103,242	68,021	56,607
Manufacturing	177,646	188,485	217,643	181,765	189,368	195,682
Military						
Number of Wage/Salary Jobs	1,243,971	1,419,561	1,719,859	1,725,089	1,718,186	1,898,361
Total Earnings (thousands of $1998)	$ 38,134,609	$ 45,729,451	$ 57,309,065	$ 57,202,029	$ 54,318,056	$ 59,750,507
Agricultural Services	$ 1,471,525	$ 1,560,997	$ 617,689	$ 640,488	$ 750,743	$ 844,236
Mining	$ 2,218,403	$ 3,079,115	$ 4,757,765	$ 4,648,182	$ 3,009,964	$ 2,678,051
Manufacturing	$ 6,456,496	$ 7,475,676	$ 9,491,587	$ 7,928,670	$ 7,897,867	$ 8,519,747
Total Establishments	NA	NA	77,352	96,146	88,290	96,603
Agricultural Services	NA	NA	749	933	1,003	1,316
Mining	NA	NA	1,745	2,251	1,667	1,534
Manufacturing	NA	NA	3,598	3,917	3,854	4,097
Changes in Personal Economy						
Total Mean Household Income ($1998)	$ 31,440	NA	$ 37,986	NA	$ 32,386	NA
White Mean Household Income	$ 36,204	NA	$ 42,990	NA	$ 37,350	NA
Black Mean Household Income	$ 19,032	NA	$ 22,911	NA	$ 19,584	NA
Per Capita Income ($1998)	$ 12,987	$ 14,939	$ 17,354	$ 18,024	$ 18,441	$ 20,320
Average Wage Per Job ($1998)	$ 25,097	$ 25,861	$ 27,190	$ 26,565	$ 25,037	$ 24,865
Changes in a Social Indicator						
Suicide Rate per 100,000 Population	9.2	11.8	12.1	13.3	13.1	12.6

Not Available

Source: See Table 4-1.

Table B-4. Summary of selected variables: Mississippi.

Variable	1970	1975	1980	1985	1990	1995
Changes in Demographics						
Total Population	2,221,128	2,399,924	2,525,342	2,588,103	2,577,164	2,690,563
Age						
0-9	447,378	NA	434,327	NA	407,663	NA
10-19	485,398	NA	485,154	NA	435,575	NA
20-29	301,489	NA	430,634	NA	390,457	NA
30-44	338,086	NA	432,915	NA	555,475	NA
45-59	324,225	NA	344,587	NA	356,855	NA
60+	320,336	NA	393,021	NA	427,191	NA
Race						
White	1,394,921	NA	1,615,632	NA	1,632,884	NA
Black	815,626	NA	887,111	NA	915,858	NA
Changes in Industry Structure						
Total Employment	916,786	1,000,802	1,114,264	1,129,005	1,207,903	1,378,925
Agricultural Services	115,687	100,607	91,534	77,161	67,716	69,133
Mining	8,366	8,761	14,695	16,666	9,697	8,573
Manufacturing	187,891	207,040	230,391	230,758	252,629	265,405
Military	46,568	44,027	40,708	41,787	37,402	37,184
Number of Wage/Salary Jobs	754,782	825,334	934,967	931,954	1,017,770	1,166,285
Total Earnings ($1998)	$ 19,556,286	$ 22,549,485	$ 24,643,931	$ 25,617,647	$ 27,472,747	$ 32,648,451
Agricultural Services	$ 1,870,068	$ 1,333,296	$ 598,423	$ 814,354	$ 618,235	$ 755,295
Mining	$ 244,567	$ 296,688	$ 503,852	$ 422,130	$ 239,808	$ 238,074
Manufacturing	$ 4,779,849	$ 5,684,518	$ 6,381,723	$ 6,550,330	$ 7,074,639	$ 7,711,163
Total Establishments	NA	NA	43,122	51,483	52,888	57,095
Agricultural Services	NA	NA	407	525	650	845
Mining	NA	NA	396	511	434	377
Manufacturing	NA	NA	2,839	3,150	3,588	3,896
Changes in Personal Economy						
Total Mean Household Income ($1998)	$ 27,575	NA	$ 32,272	NA	$ 30,178	NA
White Mean Household Income	$ 33,532	NA	$ 35,131	NA	$ 36,123	NA
Black Mean Household Income	$ 16,622	NA	$ 19,700	NA	$ 19,631	NA
Per Capita Income ($1998)	$ 10,979	$ 12,582	$ 13,700	$ 14,482	$ 15,859	$ 17,907
Average Wage Per Job ($1998)	$ 19,996	$ 21,336	$ 21,174	$ 21,689	$ 21,510	$ 22,037
Changes in a Social Indicator						
Suicide Rate per 100,000 Population	6.7	9.8	9.2	10.4	11.2	11.8

NA - Not Available
Source: See Table 4-1.

Table B-5. Summary of selected variables: Texas.

Variable	1970	1975	1980	1985	1990	1995
Changes in Demographics						
Total Population	11,236	12,568,182	14,338,208	16,272,722	17,042,892	18,737,574
Age						
0-9	2,145,759	NA	2,338,950	NA	2,276,124	NA
10-19	2,275,461	NA	2,532,343	NA	2,596,282	NA
20-29	1,721,148	NA	2,722,412	NA	2,835,455	NA
30-44	1,922,040	NA	2,727,714	NA	4,129,687	NA
45-59	1,693,974	NA	2,005,062	NA	2,306,187	NA
60+	1,438,348	NA	1,902,710	NA	2,336,775	NA
Race						
White	9,749,569	NA	11,303,054	NA	12,787,521	NA
Black	1,396,380	NA	1,704,741	NA	2,018,543	NA
Changes in Industry Structure						
Total Employment	5,045,452	5,938,347	7,510,559	8,717,865	9,286,674	10,533,242
Agricultural Services	324,685	322,087	335,015	340,101	344,767	382,209
Mining	139,728	171,269	312,956	404,538	290,869	263,765
Manufacturing	756,048	825,794	1,068,107	1,024,982	1,021,724	1,079,954
Military	230,469	198,531	187,099	193,348	187,506	177,093
Number of Wage/Salary Jobs	4,235,253	4,966,329	6,360,098	7,214,488	7,499,983	8,548,757
Total Earnings (thousands of $1998)	$ 140,057,143	$ 172,880,730	$ 222,443,484	$ 263,647,361	$ 276,121,514	$ 321,069,914
Agricultural Services	$ 5,814,307	$ 5,105,118	$ 2,408,648	$ 3,612,175	$ 4,947,717	$ 4,240,956
Mining	$ 4,614,954	$ 8,614,852	$ 14,292,152	$ 16,875,291	$ 12,498,726	$ 13,555,356
Manufacturing	$ 27,417,458	$ 31,723,215	$ 43,974,534	$ 43,035,342	$ 46,647,863	$ 53,578,319
Total Establishments	NA	NA	300,583	401,854	394,482	438,262
Agricultural Services	NA	NA	2,815	4,158	5,034	6,467
Mining	NA	NA	6,682	9,443	7,450	6,955
Manufacturing	NA	NA	16,802	20,375	20,781	22,880
Changes in Personal Economy						
Total Mean Household Income ($1998)	$ 33,245	NA	$ 39,511	NA	$ 35,392	NA
White Mean Household Income	$ 34,413	NA	$ 40,662	NA	$ 37,741	NA
Black Mean Household Income	$ 16,957	NA	$ 21,437	NA	$ 18,109	NA
Per Capita Income ($1998)	$ 15,345	$ 17,342	$ 19,642	$ 21,221	$ 21,584	$ 22,867
Average Wage Per Job ($1998)	$ 26,315	$ 27,055	$ 27,960	$ 28,979	$ 28,161	$ 28,264
Changes in a Social Indicator						
Suicide Rate per 100,000 Population	11.5	13.3	12.5	13.8	12.6	11.9

NA - Not Available
Source: See Table 4-1.

Tables B-6. Summary of selected variables: United States.

Variable	1970	1975	1980	1985	1990	1995
Changes in Demographics						
Total Population	203,798,722	215,456,585	227,224,719	237,923,734	249,439,545	262,760,639
Age						
0-9	37,132,000	NA	33,048,000	NA	36,909,343	38,609,216
10-19	39,888,000	NA	39,410,000	NA	34,954,197	36,950,049
20-29	29,869,000	NA	40,840,000	NA	40,369,833	37,000,054
30-44	34,538,000	NA	43,195,000	NA	59,682,704	64,388,721
45-59	33,214,000	NA	34,415,000	NA	35,667,036	42,203,245
60+	28,596,000	NA	35,638,000	NA	41,856,532	43,609,354
Race						
White	178,098,000	NA	188,372,000	NA	199,686,000	NA
Black	22,581,000	NA	26,495,000	NA	29,986,000	NA
Changes in Industry Structure						
Total Employment			126,334,000	186,258,000	273,362,000	346,634,000
Agricultural Services	81,015,200	89,159,200	105,517,400	118,491,400	134,658,200	147,303,000
Mining	525,300	659,300	909,000	1,152,300	1,452,400	1,786,300
Manufacturing	4,398,800	4,664,300	5,654,200	6,465,500	7,264,000	7,744,800
Military	3,232,000	2,656,000	2,501,000	2,746,000	2,750,000	2,290,000
Number of Wage/Salary Jobs	78,797,000	84,610,000	97,894,000	105,292,000	117,105,000	124,858,000
Total Earnings (thousands of $1998)	$2,763,924,370	$3,022,318,182	$3,333,758,893	$3,719,463,636	$4,257,226,933	$4,615,341,176
Agricultural Services	$ 90,596,638	$ 105,569,697	$ 57,247,035	$ 66,957,576	$ 82,451,371	$ 66,345,454
Mining	$ 29,415,966	$ 48,669,697	$ 71,974,308	$ 63,653,030	$ 43,263,092	$ 40,534,759
Manufacturing	$ 98,882,353	$ 104,015,151	$ 113,942,688	$ 139,313,636	$ 157,723,192	$ 162,186,096
Total Establishments	NA	NA	4,543,167	5,701,485	6,175,563	6,613,218
Agricultural Services	NA	NA	46,108	63,700	84,811	108,353
Mining	NA	NA	29,676	36,913	30,359	27,356
Manufacturing	NA	NA	319,377	357,863	378,087	389,925
Changes in Personal Economy						
Total Mean Household Income ($1998)	41,237	NA	41,666	NA	46,646	NA
White Mean Household Income	42,846	NA	43,347	NA	48,528	NA
Black Mean Household Income	26,761	NA	27,635	NA	30,946	NA
Per Capita Income ($1998)	$ 17,130	$ 18,485	$ 19,885	$ 21,891	$ 23,925	$ 24,983
Average Wage Per Job ($1998)	$ 30,277	$ 30,558	$ 29,184	$ 29,882	$ 30,587	$ 30,883
Changes in a Social Indicator						
Suicide Rate per 100,000 Population	11.6	12.7	11.9	12.3	12.4	11.9

NA - Not Available

Source: See Table 4-1.

Table B-7. Educational achievement.

	Baldwin		Mobile		Lafourche		Terrebonne		San Patricio	
	No.	%	No.	%	No.	%	No.	%	No.	%
1940										
Persons 25 and older	15,659		77,688		16,854		15,733		13,723	
Finished 8th grade or less	10,756	68.7	46,073	59.3	13,871	82.3	12,344	78.5	7,993	58.2
Finished high school	1,361	8.7	11,813	15.2	963	5.7	857	5.4	1,733	12.6
Some college	752	4.8	3,105	4.0	404	2.4	408	2.6	866	6.3
4 year college degree or higher	365	2.3	2,468	3.2	336	2.0	357	2.3	511	3.7
1950										
Persons 25 and older	20,280		124,735		19,525		19,725		16,280	
Finished 8th grade or less	12,515	61.7	63,035	50.5	15,400	78.9	14,695	74.5	10,250	63.0
Finished high school	2,465	12.2	23,476	18.8	1,185	6.1	1,435	7.3	1,660	10.2
Some college	1,000	4.9	7,155	5.7	520	2.7	585	3.0	880	5.4
4 year college degree or higher	695	3.4	4,550	3.6	440	2.3	495	2.5	585	3.6
1960										
Persons 25 and older	24,429		156,448		25,765		26,479		20,155	
Finished 8th grade or less	10,369	42.4	63,191	40.4	17,762	68.9	16,413	62.0	11,456	56.8
Finished high school	4,595	18.8	39,296	25.1	3,245	12.6	4,092	15.5	3,358	16.7
Some college	1,606	6.6	11,083	7.1	912	3.5	1,102	4.2	1,288	6.4
4 year college degree or higher	1,223	5.0	8,914	5.7	1,078	4.2	1,136	4.3	953	4.7
1970										
Persons 25 and older	31,524		160,718		31,221		33,600		22,529	
Finished 8th grade or less	11,419	36.2	54,202	33.7	16,862	54.0	15,698	46.7	9,876	43.8
Finished high school	8,426	26.7	43,792	27.2	6,471	20.7	7,994	23.8	4,877	21.6
Some college	2,334	7.4	12,675	7.9	1,534	4.9	2,040	6.1	2,074	9.2
4 year college degree or higher	2,038	6.5	12,072	7.5	1,778	5.7	1,924	5.7	1,702	7.6
1980										
Persons 25 and older	45,605		200,918		41,623		46,849		30,272	
Finished 8th grade or less	9,822	21.5	39,220	19.5	16,098	38.7	14,411	30.8	9,754	32.2
Finished high school	15,380	33.7	69,871	34.8	11,620	27.9	15,259	32.6	8,161	27.0
Some college	6,602	14.5	29,075	14.5	3,521	8.5	4,835	10.3	4,169	13.8
4 year college degree or higher	5,498	12.1	24,926	12.4	4,034	9.7	4,570	9.8	3,289	10.9
1990										
Persons 25 and older	64,623		232,254		49,724		55,636		34,297	
Finished 8th grade or less	6,386	9.9	25,046	10.8	13,393	26.9	12,260	22.0	7,688	22.4
Finished high school	20,544	31.8	75,114	32.3	16,588	33.4	19,412	34.9	9,073	26.5
Some college	15,900	24.6	51,722	22.3	6,372	12.8	8,530	15.3	7,958	23.2
4 year college degree or higher	10,870	16.8	36,078	15.5	4,977	10.0	5,243	9.4	3,764	11.0

Source: LSU, 1996; U.S. DOC, BOC., various years.

Table B-7. Educational achievement (cont'd).

Alabama		Louisiana		Texas		Florida		Mississippi		U.S.	
No.	%	No.	%	No.	%	No.	%	No.	%	No.	%
1,354,736		1,204,647		3,413,739		1,082,389		1,043,384		74,776,000	
945,989	69.8	838,913	69.6	1,853,787	54.3	621,548	57.4	728,538	69.8	44,518,000	59.5
117,615	8.7	117,809	9.8	450,439	13.2	164,059	15.2	89,291	8.6	10,552,000	14.1
56,097	4.1	51,125	4.2	234,018	6.9	66,100	6.1	45,303	4.3	4,075,000	5.4
38,960	2.9	42,316	3.5	150,419	4.4	53,109	4.9	31,419	3.0	3,407,000	4.6
1,559,445		1,415,145		4,213,255		1,637,240		1,073,260		87,483,000	
931,415	59.7	863,815	61.0	1,978,075	46.9	732,760	44.8	654,945	61.0	41,063,000	46.9
193,995	12.4	162,630	11.5	661,605	15.7	334,875	20.5	132,130	12.3	17,664,000	20.2
77,600	5.0	78,425	5.5	344,715	8.2	131,550	8.0	57,795	5.4	6,259,000	7.2
56,840	3.6	66,555	4.7	254,365	6.0	102,790	6.3	41,305	3.8	5,285,000	6.0
1,669,871		1,639,215		5,030,559		2,845,445		1,064,976		99,438,000	
823,641	49.3	849,427	51.8	2,054,163	40.8	1,066,616	37.5	548,775	51.5	39,500,000	39.7
310,175	18.6	309,859	18.9	1,095,017	21.8	713,661	25.1	184,331	17.3	24,455,000	24.6
101,201	6.1	110,112	6.7	491,090	9.8	275,710	9.7	73,496	6.9	8,742,000	8.8
95,131	5.7	110,138	6.7	403,447	8.0	221,587	7.8	59,273	5.6	7,625,000	7.7
1,808,798		1,809,914		5,817,155		3,316,937		1,111,789		109,870,505	
665,720	36.8	698,399	38.6	1,758,413	30.2	1,104,113	33.3	430,091	38.7	31,087,000	28.3
468,269	25.9	446,400	24.7	1,458,297	25.1	1,219,216	36.8	266,121	23.9	34,158,000	31.1
136,287	7.5	153,171	8.5	665,746	11.4	458,864	13.8	99,907	9.0	11,651,000	10.6
141,936	7.8	163,792	9.0	632,476	10.9	407,264	12.3	89,536	8.1	11,717,000	10.7
2,217,315		2,281,481		7,944,161		6,250,125		1,367,792		113,267,239	
553,877	25.0	568,590	24.9	1,640,625	20.7	1,101,429	17.6	368,775	27.0	22,817,000	20.1
704,207	31.8	705,808	30.9	2,285,510	28.8	2,189,572	35.0	398,848	29.2	47,934,000	42.3
278,205	12.5	292,793	12.8	1,347,880	17.0	1,047,471	16.8	182,233	13.3	19,379,000	17.1
270,063	12.2	317,223	13.9	1,340,981	16.9	930,134	14.9	168,086	12.3	22,193,000	19.6
2,545,969		2,536,994		10,310,605		8,887,168		1,538,997		156,538,000	
348,848	13.7	372,913	14.7	1,387,528	13.5	842,811	9.5	240,267	15.6	17,591,000	11.2
749,591	29.4	803,328	31.7	2,640,162	25.6	2,679,285	30.1	423,624	27.5	60,119,000	38.4
553,512	21.7	520,671	20.5	2,702,979	26.2	2,312,404	26.0	338,741	22.0	28,075,000	17.9
399,228	15.7	409,123	16.1	2,094,905	20.3	1,624,405	18.3	226,947	14.7	33,291,000	21.3

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13. ABSTRACT (Maximum 200 words)

The study examined the historical, social, and economic changes in South Louisiana, Coastal Bend, Texas, and Mobile Bay, Alabama between 1930 and the mid- to late 1990's. The study focused on three issues: changes in economic and social structure; community landscapes; and work and education. Field work was completed in June 1998.

Key findings include: there are similarities among the study areas, but no single story; Federal, but non-MMS, policies affected the study areas; the mid-1980's decline brought changes to the economies and individuals most directly affected by the offshore oil and gas industry; leisure/tourism/retirees economies are incompatible with OCS oil and gas activity; and the oil and gas industry is complex.

The study also concluded that the analytical approaches used by historians, anthropologists, and economists are useful in identifying and explaining impacts of offshore oil and gas on coastal counties, parishes, and communities.

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The Department of the Interior Mission

As the Nation's principal conservation agency, the Department of the Interior has responsibility for most of our nationally owned public lands and natural resources. This includes fostering sound use of our land and water resources; protecting our fish, wildlife, and biological diversity; preserving the environmental and cultural values of our national parks and historical places; and providing for the enjoyment of life through outdoor recreation. The Department assesses our energy and mineral resources and works to ensure that their development is in the best interests of all our people by encouraging stewardship and citizen participation in their care. The Department also has a major responsibility for American Indian reservation communities and for people who live in island territories under U.S. administration.

The Minerals Management Service Mission

As a bureau of the Department of the Interior, the Minerals Management Service's (MMS) primary responsibilities are to manage the mineral resources located on the Nation's Outer Continental Shelf (OCS), collect revenue from the Federal OCS and onshore Federal and Indian lands, and distribute those revenues.

Moreover, in working to meet its responsibilities, the **Offshore Minerals Management Program** administers the OCS competitive leasing program and oversees the safe and environmentally sound exploration and production of our Nation's offshore natural gas, oil and other mineral resources. The MMS **Minerals Revenue Management** meets its responsibilities by ensuring the efficient, timely and accurate collection and disbursement of revenue from mineral leasing and production due to Indian tribes and allottees, States and the U.S. Treasury.

The MMS strives to fulfill its responsibilities through the general guiding principles of: (1) being responsive to the public's concerns and interests by maintaining a dialogue with all potentially affected parties and (2) carrying out its programs with an emphasis on working to enhance the quality of life for all Americans by lending MMS assistance and expertise to economic development and environmental protection.