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Gulf Coast Communities and the Fabrication and Shipbuilding Industry: A Comparative Community Study

Volume II: Community Profiles

U.S. Department of the Interior
Bureau of Ocean Energy Management
Gulf of Mexico OCS Region

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Volume II: Community Profiles

Editors

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LIST OF ACRONYMS

AAPA	American Association of Port Authorities
ABC	Associated Builders and Contractors
ABS	American Bureau of Shipping
ABSD	advanced base sectional drydock
ADDSCO	Alabama Drydock and Shipbuilding Company
AEWR	Adverse Effect Wage Rate
AFL-CIO	American Federation of Labor-Congress of Industrial Organizations
AHTS	anchor handling tug supply vessel
AIDT	Alabama Industrial Development Training
AmFELS	American Far East Levingston Shipbuilding
ASIB	Active Shipbuilding Industrial Base
ATC	Applied Technology Center [founded in 1976 as the Pascagoula Vocational Technical Center]
BEA	Bureau of Economic Analysis, U.S. Department of Commerce
BIP	Border Industrialization Program
BISD	Brownsville Independent School District
BLS	Bureau of Labor Statistics, U.S. Department of Labor
BOE	barrels of oil equivalent
BOEM	Bureau of Ocean Energy Management, U.S. Department of the Interior
BP	formerly British Petroleum
BRAC	Base Realignment and Closure Program, U.S. Navy
BXA	Bureau of Export Administration
CAA	Community Action Agency
CBI	Chicago Bridge and Iron
CCAD	Corpus Christi Army Depot
CCMPO	Corpus Christi Metropolitan Planning Organization
CDBG	Community Development Block Grant, a program of the U.S. Department of Housing and Urban Development
CDP	Census Designated Place
CEDS	Community Economic Development Scheme
CISD	Consolidated Independent School District
CLEAR	Consolidated Land, Energy, and Aquatic Resources Act of 2010
CMC	Chet Morrison Contractors
CNC	computer numerically controlled
COLA	cost of living adjustment
COO	Chief Operating Officer
CPI	Consumer Price Index
DOC	Department of Corrections
DOE	Department of Energy
DOL	Department of Labor
DP	dynamic positioning
DPC	Defense Plant Corporation
DWT	dead weight ton
E&P	exploration and production
EADS	European Aeronautic Defence and Space Company
ECO	Edison Chouest Offshore
EDA	Economic Development Administration, U.S. Department of Commerce
EEZ	Exclusive Economic Zone
EPA	Environmental Protection Agency

ESL	English as a Second Language
ETPM	Entrepose Pour les Travaux Petroliers et Maritimes [Entrepose for Petroleum and Maritime Works]; ETPM-USA is this French company's U.S. subsidiary
FEMA	Federal Emergency Management Agency, U.S. Department of Homeland Security
FEPC	Fair Employment Practices Committee
FERC	Federal Energy Regulatory Commission
FPS	floating production system
FPSO	floating production storage and offloading
FSV	Fast Supply Vessel
FTZ	Foreign Trade Zone
GAP	Growth and Prosperity Act of 2000 [State of Mississippi]
GED	General Education Certificate or Certification
GO Zone	Gulf Opportunity Zone [created by the Gulf Opportunity Zone Act of 2005]
GPS	Global Positioning System
GSSC	Gulf State Shipbuilder's Consortium
H-2B	Type of U.S. non-immigrant visa
HR	Human Resources
HUD	Department of Housing and Urban Development
IADC	International Association of Drilling Contractors
ICAF	Industrial College of the Armed Forces
ICE	Immigration and Customs Enforcement, U.S. Department of Homeland Security
IMCA	International Marine Contractors Association
INA	Immigration and Nationality Act of 1952
ISD	Independent School District
ITF	International Transportation Federation
IUMSWA	Industrial Union of Marine and Shipbuilding Workers
JCEDF	Jackson County [Mississippi] Economic Development Foundation
LASH	Lighter Aboard Ships
LCT	Landing Craft Tank
LCVP	Landing Craft Vehicle Personnel carrier
LDS	Latter-Day Saints
LHWC	Longshoreman's and Harbor Workers Compensation
LHWCA	Longshore and Harbor Workers' Compensation Act of 1927
LLC	Limited Liability Company
LMA	Labor Market Area
LMPC	Lower Mississippi Port Cluster
LNG	liquefied natural gas
LOOP	Louisiana Offshore Oil Port
LPG	liquefied petroleum gas
MARAD	Maritime Administration, U.S. Department of Transportation
MBFC	Mississippi Business Finance Corporation
MDA	Mississippi Development Authority
MDOC	Mississippi Department of Corrections
MEP	Manufacturing Extension Partnership [affiliated with the Mississippi Technical Alliance]
MGCCC	Mississippi Gulf Coast Community College
MMEIA	Mississippi Major Economic Impact Authority
MMS	Minerals Management Service, U.S. Department of the Interior [now the Bureau of Ocean Energy Management]
MODU	mobile offshore drilling units
MPO	Metropolitan Planning Organization
MSA	Metropolitan Statistical Area

MSB	major shipbuilding base
NAFTA	North American Free Trade Agreement
NAICS	North American Industry Classification System
NAS	North American Shipbuilding
NASA	National Aeronautics and Space Administration
NCCER	National Center for Construction Education and Research
NED	National Economic Development
NIOSH	National Institute for Occupational Safety and Health
NLCD	National Land Cover Database
NMFS	National Marine Fisheries Service
NOAA	National Oceanic and Atmospheric Administration
NOIA	National Ocean Industries Association
NSRP	National Shipbuilding Research Program
OCLSA	Outer Continental Shelf Lands Act of 1953
OCS	Outer Continental Shelf
OES	Occupational Employment Statistics
OHS	occupational health and safety
OJT	On-the-job training
OMB	Office of Management and Budget
OPA	Oil Pollution Act of 1990
OSHA	Occupational Safety and Health Administration, U.S. Department of Labor; also the Occupational Safety and Health Act of 1970
OSV	offshore service vessel
OTA	Office of Technology Assessment, U.S. Congress
P&G	Principles and Guidelines, Water Resource Council
RO-RO	Roll-on/Roll-off vessels
ROV	remotely-operated [underwater] vehicle
SCIA	South Central Industrial Association
SCPDC	South Central Planning and Development Commission
SD	School District
SHARP	Safety and Health Achievement Recognition Program [administered by OSHA]
SIC	Standard Industrial Classification
SLEC	South Louisiana Economic Council
TDI	Texas Drydock, Inc.
TEDA	Terrebonne Economic Development Association
TEU	twenty-foot equivalent unit
TLP	tension leg platform
TOPS	Tuition Opportunity Program for Students [state-funded Louisiana scholarship program]
TSA	Transportation Security Administration
TSTC	Texas State Technical College
TWC	Texas Workforce Commission
TWIC	Transportation Worker Identification Credential
ULCC	ultra large crude carrier
USACE	U.S. Army Corps of Engineers
USCIS	U.S. Citizenship and Immigration Services
USEPA	U.S. Environmental Protection Agency
USW	United Steel Workers
UTB-TSC	University of Texas at Brownsville and Texas Southmost College
VLCC	very large crude carrier
VPP	Voluntary Protection Program [administered by OSHA]
WC	Workers' Compensation system [federal insurance fund]

WIA	Workforce Investment Act of 1998
WIN	Workforce Investment Network
WIRED	Workforce Innovations in Regional Economic Development [a U.S. Department of Labor program]
WRDA	Water Resources Development Act of 1986
YFD	yard floating drydock

PREFACE

The fabrication and shipbuilding enterprises in the Gulf of Mexico are unique. Though some date back more than a century, and others were established to support wartime expansion, many were born as a local response to the development of offshore petroleum in the Gulf and still rely on that niche market. Like the offshore industry that it serves, shipbuilding and fabrication for this market has evolved into an international industry, bucking a general decades-long trend in the United States of steady decline of heavy industries in the face of globalization.

At the same time, the shipbuilding and fabrication industries concentrate specific offshore petroleum industry-related social and economic effects in particular towns and cities along the Gulf Coast. They are responsible for the lion's share of the employment generated by the offshore oil and gas industry and, for decades, have anchored and stimulated the growth of many coastal communities. Consequently, they have shaped the physical attributes, populations, and fiscal, social, and economic systems of these communities.

This study was designed to describe the shipbuilding and fabrication industries in the Gulf of Mexico region, their geographic distribution, variation in their size and function, their trends and dynamics, the services they provide, and their labor demands and how they meet them. It brought together historical, demographic, and ethnographic data collection and analyses to define the industry and explore the evolution of specific sites where petroleum-related shipbuilding and fabrication occurs, changes over time and space, and economic linkages.

This report focuses on the local significance of these industries, noting their similarities and differences in relation to the U.S. and global shipbuilding industry, and on their specific consequences to the region. Historical data provide a broad view and make it possible to track changes in the industries and their impacts. Demographic data address key community socioeconomic variables such as population size, age, household income, racial and ethnic composition, educational attainment, housing, employment, and earnings and, where possible, link those to the industries. Ethnographic data reveal community perspectives on the industries and provide local specificity. Together these data offer a look at the interactions between the communities and the fabrication and shipbuilding industries, identifying and analyzing the benefits, such as job creation, and the burdens, such as infrastructure demand, that these industries have placed on their host communities.

This study was conducted between 2006 and 2009 and led by researchers from the University of Houston Center for Public History and the University of Arizona Bureau of Applied Research in Anthropology. It brought together historians, a political scientist, an economist, and anthropologists. The historians, led by Dr. Tyler Priest of the University of Houston, included Dr. Jason Theriot, Jamie Christy, Dr. Sonia Hernandez, and Dr. Paul Wilson. They were supported by Dr. Joshua Stockley, a political scientist, and Dr. John Lajaunie, an economist, both of whom were at Nicholls State University in Thibodaux, Louisiana when the study began. The anthropologists were led by Drs. Diane Austin and Tom McGuire of the University of Arizona and included graduate students Jacob Campbell, Rebecca Crosthwait, Ben McMahan, Lauren Penney, Victoria Phaneuf, Preetam Prakash, Lucero Radonic, and Sarah Raskin. They were assisted in the field by undergraduates Irene Angelov, Terez Banks, and Heather Gallivan, and were supported by Kevin Bulletts, Britny Delp, Samantha Herr, Gigi Owen, Monica Voge, and Dr. Drexel Woodson.

The first volume of this report provides a historical overview of Gulf Coast shipbuilding and fabrication. It then presents a model designed to explore the statistical relationships among

various economic and social measures for each of the seven communities highlighted in the study and, specifically, to determine whether the selected variables measure the relationship between the fabrication industry and the well-being of the community. It examines whether a statistical model can consistently capture the impact of these industry segments in such a way as to support a forward-looking forecast of the potential impact of changes in the industries on the study communities.

The second volume is devoted to detailed descriptions of the seven communities selected for this study. From east to west, these include: (1) south Mobile County, Alabama; (2) southeast Jackson County, Mississippi; (3) Lafourche and Terrebonne Parishes, Louisiana; (4) east St. Mary Parish, Louisiana; (5) Port Arthur and Orange, within the Golden Triangle of southeast Texas; (6) Corpus Christi and Ingleside, within the Coastal Bend of Texas; and (7) Brownsville and Port Isabel of Cameron County, Texas. The descriptions include past growth and development, community organization and infrastructure, and economic and social conditions that existed in 2007 and 2008. Each description discusses community-specific dynamics related to fabrication and shipbuilding and their relationship to offshore petroleum development. The community descriptions also address workforce issues, examining recruitment, education and training, and retention. The community descriptions are supplemented by appendices containing detailed demographic data and discussions of those data.

The third and final volume presents a series of analytical chapters addressing the geography of the industry; labor issues; business startup and organization; the configuration of jobs and responsibilities on a yard; community, economic, and workforce development; risk; and the effects of hurricanes on the industry. These chapters draw primarily from the rich ethnographic data gathered during this study to explore common themes that cut across the industries and study communities (see also Preface to Volume III).

This study has been framed by disasters. It was initially conceived in 2005 but was put on hold when the devastation caused by Hurricanes Katrina and Rita affected people and organizations across the Gulf Coast, disrupting the operations of the Gulf of Mexico regional office of what was then the U.S. Minerals Management Service (now the Bureau of Ocean Energy Management) as well as the University of Houston and Nicholls State University. Fieldwork began in 2007 and was underway in 2008 when Hurricanes Dolly, Gustav, and Ike struck the Gulf Coast, ensuring that none of the communities that were the focus of this research were spared. Fieldwork for the study was completed in 2009 and the report was being completed when, on April 20, 2010, the *Deepwater Horizon* drilling rig exploded in the Gulf of Mexico, about 40 miles southeast of the Louisiana coast. The study's principal investigators and several of the graduate students went to work almost immediately to gather data about the impacts of that disaster on Gulf Coast communities and to share information and perspectives on the region and the industry with those seeking to understand the disaster, its causes, and its effects. Work on this report was resumed in late 2011. Though efforts were made to update sections of the community profiles, it was not possible to revisit all the study communities and participants or to gather 2010 census data and redo the demographic analyses; that work will remain for a future study.

ACKNOWLEDGEMENTS

Special thanks to the men and women who work in fabrication and shipbuilding across the Gulf of Mexico region. These individuals perform difficult and sometimes dangerous tasks, often in extreme heat and under considerable time pressures, to ensure the readiness of the rigs, platforms, and vessels needed to extract and transport oil and gas from the U.S. outer continental shelf, as well as the myriad other tasks to which the vessels they construct are assigned. This study would not have been possible without the participation of hundreds of individuals in the fabrication and shipbuilding industry and in the seven study communities who willingly shared their time, knowledge, and perspectives with members of the research team. Because most of them were promised anonymity, we cannot identify them by name. However, their contributions have been critical to the success of this effort.

In addition, we thank the business managers of our respective institutions. Maria Rodriguez of the Bureau of Applied Research in Anthropology at the University of Arizona ensured that contracts were issued, travel was authorized, and the ethnography team had the resources it needed to complete our work. Lorena Lopez of the Department of History at the University of Houston helped manage resources for the entire study, keeping the UH team on pace and coordinating the subcontract with BARA and the contracts with consultants.

Several people and institutions deserve special recognition, for they have supported this study by sharing their homes and offices, providing a friendly face and welcome respite to fieldworkers far from home. Thanks to Rochelle Ste. Marie, Steve and Jean Shirley, Harriet Richardson Seacat, and Elizabeth Heise who housed researchers, provided meals and contacts within their communities, and offered opportunities for thinking through the complex relationships between the fabrication and shipbuilding industries and the communities that host them. Thanks also to Jennifer Buchanan of the Grand Bay National Estuarine Research Reserve, Renee Hague of the Genealogy Department at the Pascagoula Public Library, and Malcolm Sharples of Offshore Risk & Technology Consulting, Inc., for providing key insights and contacts necessary for this study.

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4. On the Yard	Preetam Prakash
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7. Cones of Uncertainty: The Nature of Business in Hurricane Country	Ben McMahan

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H. East St. Mary Parish	Joshua Stockley
I. Port Arthur-Orange	Joshua Stockley and John Lajaunie
J. Corpus Christi-Ingleside	Joshua Stockley and John Lajaunie
K. Brownsville-Port Isabel	Joshua Stockley and John Lajaunie

1. INTRODUCTION

The purpose of this volume is to provide multiple lenses through which to view the shipbuilding and fabrication industry along the Gulf of Mexico, and to establish some basic categories that will be used in the study area profiles in this volume and in the analysis provided in Volume III of this report. This volume is descriptive in nature and designed to give an overview of the shipbuilding and fabrication industry as experienced by the Gulf Coast communities within which it operates. The chapter begins with a discussion of criteria for defining the study areas and then presents classification schemes based on key elements of the industry, focusing first on the companies and second on the people who make it up, in order to illustrate the industry's diversity. The chapter concludes with a description of the methodology used to gather the data for the profiles.

1.1. STUDY AREA

The fabrication and shipbuilding industry in the Gulf of Mexico is concentrated primarily in the region stretching from Brownsville, Texas through southern Mobile County, Alabama. Numerous economic incentives, education and training policies, and workforce development programs are established at the state and local levels, so defining study areas or communities on the basis of state and county or parish boundaries makes it possible to examine such policies and programs and their impacts at the local level. At the same time, employees and materials cross state and county or parish lines, leading some to argue that Labor Market Areas (LMAs), which are defined by patterns of transportation to and from work and can cross state and county or parish boundaries, better represent local social systems and, empirically, local communities and economies than do political units (Killian and Tolbert 1993).

For this study, seven areas were selected, each defined to include cities, towns, and counties or parishes, or portions of these, which made sense to local residents and leaders (see Figure 1.1). From east to west, these include: (1) south Mobile County, Alabama; (2) southeast Jackson County, Mississippi; (3) Lafourche and Terrebonne Parishes, Louisiana; (4) east St. Mary Parish, Louisiana; (5) Port Arthur and Orange, within the Golden Triangle of southeast Texas; (6) Corpus Christi and Ingleside, within the Coastal Bend of Texas; and (7) Brownsville and Port Isabel of Cameron County, Texas.

Though within these areas employees do cross state and, in the case of Cameron County, even national boundaries on a regular basis, due to the demographic and economic data that were available in each location and the desire for comparison across areas and communities, none of the areas was defined to extend beyond the boundaries of a single state. This volume includes profiles of these seven study areas to further illustrate the variation within the industry based on its expression at the community level. These profiles discuss each area's historical growth and development, focusing on the fabrication and shipbuilding industry and the infrastructure that evolved to support it, as well as current economic and social conditions. They identify the benefits to communities (e.g., job creation and tax revenues), as well as burdens on communities, such as infrastructure demand, and they describe local responses to this industry. The profiles also highlight the links, both specific influences and causal relationships, between the communities and the fabrication and shipbuilding industry. In addition, they offer glimpses of recent dynamics—specifically, relationships among the shipbuilding/fabrication industry, the communities in which it is active, and the offshore petroleum industry.

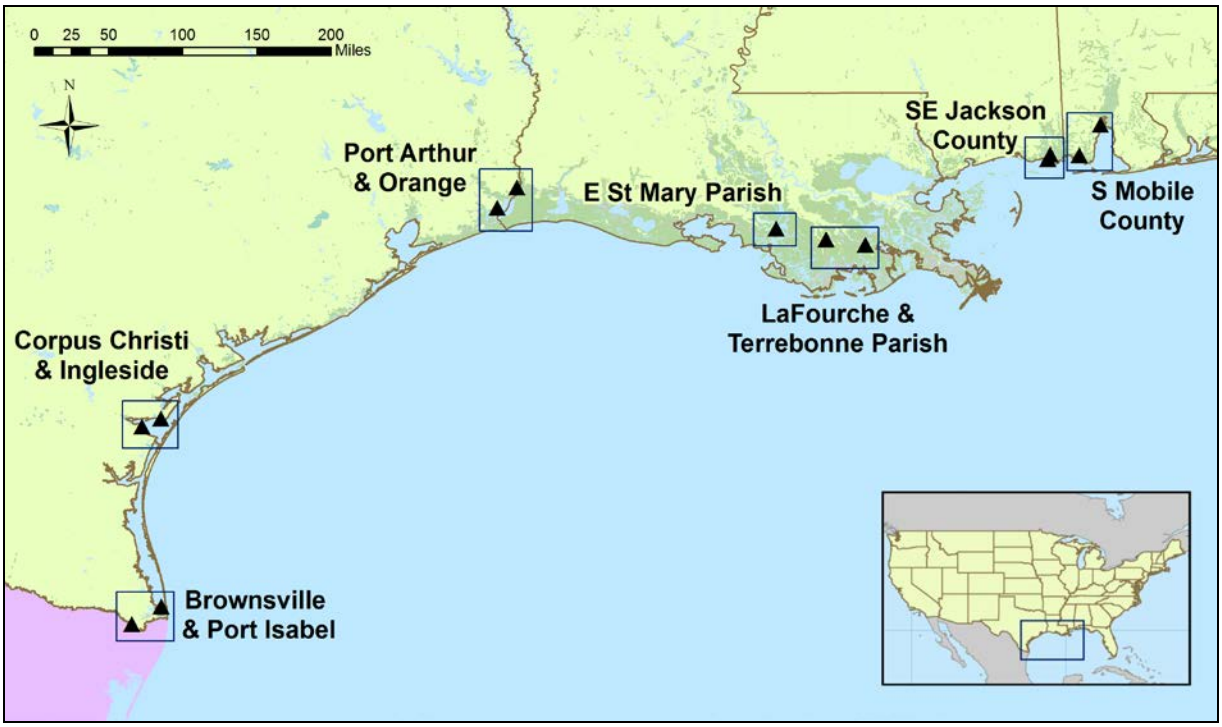

Figure 1.1. Map of the study areas.

Map was created in 2011 using data packages included with the ArcGIS software suite. Sources used to create these data layers included: ArcWorld/ESRI, National Atlas of the United States, Tele Atlas, U.S. Bureau of Transportation Statistics, U.S. Census, and U.S. Geological Survey.

1.2. STUDY METHODOLOGY

The data for this volume were collected by historians, a political scientist, an economist, and a team of anthropologists. All but the latter lived in the Gulf region during the time of the study. The historians included Jason Theriot, Jamie Christy, and Sonia Hernandez from the University of Houston and Paul Wilson from Nicholls State University. Between December 2006 and August 2008, the historians, assisted by the anthropologists, located sources, conducted historical research, and began writing histories of each study community. Through archival research and oral history accounts, they gathered data on the communities, on individual fabricators and shipyards, and on the industry as a whole, paying particular attention to changes in company ownership and function, and when and why the changes took place. Where relevant to the understanding of the history and evolution of shipbuilding in the region, they also gathered information on major shipbuilding companies, such as LeTourneau Shipyards in Longview, Texas and Avondale in New Orleans, Louisiana.

Joshua Stockley, the political scientist, and John Lajaunie, the economist, gathered quantitative data from the U.S. Census Bureau, the U.S. Department of Housing and Urban Development, the U.S. Department of Education, and the U.S. Department of Labor. Stockley and Lajaunie built a database and applied a variety of statistical techniques to identify significant demographic and economic trends, to graphically present these trends, and to discuss the results of these analyses for each of the study regions. This information was shared with the anthropologists in order to obtain context for these results; simultaneously, the anthropologists shared qualitative observations with Stockley and Lajaunie to determine whether support for

these observations could be found in the quantitative data or whether additional quantitative data was needed. The results are of this work are displayed and discussed in this volume.

The anthropologists were led by Drs. Diane Austin and Tom McGuire of the Bureau of Applied Research in Anthropology (BARA) at the University of Arizona. The BARA research team also included six graduate students and three advanced undergraduates, who worked as field ethnographers, and community assistants. The ethnographic research began with three-week scoping visits in nine areas, conducted between December 2006 and July 2007, and from which the seven study areas were selected. Then, between July 2007 and August 2008, the ethnographers spent a total of at least four months in each study area, split over two sessions at least six months apart. In October 2008, Austin and McGuire visited each study community, with the exception of Port Arthur-Orange, which was very negatively impacted by the 2008 hurricanes, to meet with key officials, business and industry representatives, and civic leaders to assess how recent events—including the 2008 hurricanes, the drop in oil and gas prices, and the troubled economy—had affected the fabrication and shipbuilding industries and the communities. Austin, McGuire, and two of the graduate student ethnographers visited Louisiana, Mississippi, and Alabama in January 2009 to share preliminary findings with study participants and gather additional information.

The anthropologists visited workplaces and homes, observed activities on the yards and in company offices, participated in and observed training sessions and meetings, and monitored local media output. They identified experts in the fabrication and shipbuilding industry, in economic and workforce training and development, and in communities where the industry operates. These individuals included current and recent fabrication and shipyard workers and managers, company owners, and other residents with knowledge of the industry. They talked with these individuals, often on multiple occasions, to learn and record what was happening in their businesses and at their job sites and their perspectives on the past, present operations, and future of the industry. The anthropologists created maps of each community, showing where industry-related yards and businesses are located. Where possible, they created occupational timelines for the study participants, using these to note movement in and out of the industry and among employers within the industry. The community assistants helped research team members gain access to workers and their families, organized community-level meetings with leaders and residents to discuss the industry and its impacts on their communities, attended public hearings and other events related to the industry and reported on what they learned. They also maintained contact within the study area when BARA researchers were elsewhere. The research team members were assisted by specially-trained graduate students who transcribed audio files and notes, created and managed databases, coded notes and newspaper articles, and gathered secondary data. The anthropologists also worked closely with Stockley and Lajaunie to identify needed demographic and economic data and interpret that data. They developed the outlines for the community profiles and established procedures for integrating the historical information and demographic data into the profiles.

1.3. U.S. SHIPBUILDING AND FABRICATION

U.S. shipbuilding receives periodic attention as worries about the nation's capacity to build and repair ships rise and fall. In the mid-to-late-1990s, for example, U.S. government and other industry analysts articulated specific concerns about the potential of the nation's shipbuilding industry to contribute to both military and commercial objectives. They highlighted a rapid decline in the construction of large, oceangoing commercial ships from the 1970s, when

approximately 20 ships were built every year in private U.S. yards, to the decade following 1984, when 10 or fewer ships were built every year. Noting the lack of orders for any new vessels between 1989 and 1991, they advocated measures to stimulate commercial shipbuilding (Committee on National Needs in Maritime Technology 1996; ICAF 1996). After more than a decade of near silence on the topic, the earlier concerns have recently been raised again (ICAF 2010).

U.S. shipyards are classified as first-tier, second-tier, and third-tier facilities (see also Chapter 1, Volume I). The U.S. Navy and the Maritime Administration (MARAD), the Department of Transportation agency responsible for waterborne transportation, developed a system of analysis defining major shipbuilding and repair bases as those private facilities with build or repair positions 400 feet (122 meters) or greater, and MARAD provides annual studies of U.S. shipbuilding capacity (Maritime Administration n.d.) The Ingalls shipyard, owned by Northrup-Grumman, is the only first-tier facility within the seven study areas, and most of the work performed at that yard is for the U.S. military. In addition, although four government-owned shipyards are responsible for the overhaul and repair of Navy or Coast Guard ships, they do not engage in new construction and none of the four is located in the Gulf region (Naval Sea Systems Command n.d.).

Second-tier shipyards include small or medium-sized facilities that construct and repair smaller vessels, primarily for inland waterways and coastal carriers and for foreign markets, such as tugs, supply boats, ferries, fishing vessels, barges, drill rigs, small military vessels, and other government-owned vessels. There are numerous second-tier facilities in the Gulf. In 2001, the Louis Berger Group identified 70 shipyards and 43 fabrication yards in the region (see Appendix A). The third tier comprises hundreds of facilities that design, develop, produce, and maintain the subsystems and components required by the shipbuilding industry (ICAF 1996).

Orders for ships and ship repairs come from the federal government, primarily the Naval Sea Systems Command, the Military Sealift Command, the Army Corps of Engineers, the U.S. Coast Guard, the National Oceanic and Atmospheric Administration (NOAA), the National Science Foundation, and MARAD, and from private companies involved in commercial shipping, passenger and cruise enterprises, operating ferries, transporting petrochemicals, commercial fishing, and towing and tugboat operations (Office of Compliance 1997). U.S. firms build commercial or military ships, or both, although beginning in the 1980s, the proportion of ships built for the military increased, due to both a specific military building program and the reduction of ships built for non-military purposes (Committee on National Needs in Maritime Technology 1996).

Much smaller and more specialized is the fabrication of platforms and rigs. Though the companies that perform this work are classified as shipbuilders, their primary clients are private enterprises engaged in the offshore petroleum industry, and they have received little attention outside of the Bureau of Ocean Energy Management (BOEM) (see The Louis Berger Group, Inc. 2004). Though they are distinct from other shipbuilders and respond to different economic indicators, there is overlap—for example, some companies fabricate both platforms and ships—so bringing the two together in a single report allows for examination of critical concerns, such as materials, workforce, quality of work, efficiency of operations, and timely contract compliance.

Shipbuilding and fabrication facilities and enterprises along the Gulf Coast are diverse, varying along a number of dimensions. These include size of operations, degree of specialization (e.g., primary focus on oil-related construction and repair, diversifying into and out of military,

fishing vessels, inland transport barges and tugs, and cruise-ship contracts), company ownership and control, extent of work conducted for foreign clients, and overseas operations. There are also significant differences in business strategies from company to company. Some integrated shipyard/boat companies undertake aggressive "new-build" programs; others acquire assets, such as boats or rigs, through mergers and consolidations. Others go out of business for a variety of reasons—lack of orders, lack of materials, project cost-overruns, and competition from abroad. The multiple-site research design of this study enabled researchers to explore and characterize the dynamics of this industry.

1.4. Offshore Petroleum and the Gulf of Mexico Fabrication and Shipbuilding Industry

Due to the extent and nature of the offshore petroleum industry in the Gulf of Mexico, centers of industrial activity—focused largely on the construction of rigs, platforms, and vessels—are not directly tied to particular offshore projects. Instead, factors such as access to transportation (land, water, and air), proximity to a workforce, and economic incentives (e.g., tax breaks or workforce development grants) have determined where fabrication and shipyards locate. As the petroleum industry has moved into deeper and deeper water, the relative importance of these factors has shifted somewhat. For example, deeper water has meant larger offshore service vessels (OSVs), which has translated into a need for deeper channels from the yards that construct those vessels to the Gulf. At the same time, deeper water has meant longer distances to the offshore worksites, which has translated into longer shifts offshore and a decoupling of the link between workplace and residence on the rigs and platforms. The fabrication, shipbuilding, and repair yards have continued to operate on standard four- or five-day workweeks (plus overtime during boom periods), and employ workers who commute daily to the workplace. Some have only recently begun discussions of the use of 7-and-7 (seven days at work and seven days off) or 14-and-14 schedules similar to those found in offshore work. At the same time, economic incentives, such as local and state tax breaks and support for workforce training activities, continue to lead companies to favor some locations over others. Efforts at regional collaboration have been limited (see Chapter 5, Volume III).

The early-21st century U.S. Gulf of Mexico fabrication and shipbuilding industry is complex and distributed across the coastal region. The fabrication corridor that is the focus of this study stretches along 1,000 miles of shoreline from the Texas-Mexico border to Alabama. The yards and shops within this corridor are interdependent and must cooperate to produce the complex engineering projects that are in demand, especially construction of large vessels and deepwater offshore platforms (The Louis Berger Group, Inc. 2004). According to a late-1990s Mustang Engineering survey of 51 yards that fabricated fixed or floating offshore oil and gas facilities and related structures, only nine had single-piece fabrication capacity for handling more than 10,000 short tons, and just 12 indicated they could fabricate structures intended for water depths exceeding 1,000 feet (Hunt and Gary 2000). "While there are large facilities capable of handling current and next-generation deepwater structures, few facilities have complete capabilities for all facets of such a project. Even the largest fabrication facilities rely on specialized yards, shops, and subcontractors for many of a project's components" (Hunt and Gary 2000:94). The industry's diversity and complexity is evident in the number of companies and the vast array of people who comprise it.

Consequently, classification of the companies, yards, and workers presents a significant challenge. Shipyards are often categorized into a few basic subdivisions either by type of

operations, whether they build or repair vessels, the type of ship, whether commercial or military, and their shipbuilding or repairing capacity (see, for instance, Office of Shipbuilding and Marine Technology 2001). This report focuses instead on Gulf Coast communities where yards are located and the myriad ways that fabrication and shipbuilding interact with local social and physical landscapes. The report's focus requires the creation and definition of new categories that integrate shipbuilding and fabrication. Several ways of categorizing the yards are described below.

1.4.1. Classification Based on Company Ownership

The companies that make up the Gulf of Mexico fabrication and shipbuilding industry range from small, one- or two-person operations to large corporate entities. This section describes five types of ownership and includes: (1) corporate multi-function conglomerates that serve multiple industries; (2) corporate fabricators that serve multiple industries; (3) independent multi-function companies that serve multiple industries; (4) independent fabricators that serve multiple industries; and (5) independent fabricators that serve a single-industry. Within these categories, the types of work that the companies do can span the industry spectrum, from new build to repair and breaking or demolition.

1.4.1.1. Corporate Multi-Function Conglomerates that Serve Multiple Industries

Corporate multi-industry conglomerates are large enterprises that include shipbuilding or fabrication as one of a number of sectors in which they are involved. Both the corporation as a whole, and the shipbuilding or fabrication sector considered independently, employ large numbers of people. These companies are publicly traded and have separate legal standing from their owners, who are protected from personal liability if the company faces legal action. They generally have a well-developed bureaucracy linking the corporate headquarters to each of the sectors, which are often separated by considerable distances. These corporations may or may not have an international presence.

1.4.1.2. Corporate Fabricators that Serve Multiple Industries

Corporate shipbuilding or fabrication companies also tend to be large enterprises, but they usually specialize in just one function. They fabricate for multiple industries and employ large numbers of people. They are publicly traded, have separate legal standing from their owners, and generally have a well-developed bureaucracy. The corporate headquarters may or may not be located at the same place as company operations, and companies may own and operate one or more yards. If they operate multiple yards, these may be located in one community or in communities separated by great distances. These corporations, too, may or may not have an international presence.

1.4.1.3. Independent Shipbuilders or Fabricators that Serve Multiple Industries

Independent companies may be sole proprietorships or limited partnerships, but their owner-managers assume legal debts and obligations. Independent shipbuilders or fabricators that have clients across multiple industries (e.g., fishing, plants, or towing) vary in size, composition, and focus. They may be very small, with only a handful of employees, or they may be quite large. They may fabricate only one type of part used in multiple industries or they may be involved in fabricating very different types of vessels, structures, and components, as well as in repairing

vessels. They may work directly for a client who purchases a complete vessel or structure, they may work for other fabricators or shipbuilders, or they may do both. These shipbuilders or fabricators may have one yard or facility, or many, at which they do their work.

1.4.1.4. Independent Multi-Division Companies that Serve Multiple Industries

Companies in this category are independent shipbuilders or fabricators who work for clients in multiple industries but who also engage in at least one other kind of economic activity, such as supplying contract labor, painting or electrical contracting, or owning and operating shrimpboats or OSVs. Thus, they share the features of the companies that engage only in shipbuilding or fabrication, but they also have the facilities, personnel, or equipment to engage in what could be another business.

1.4.1.5. Independent Fabricators that Serve a Single Industry

Independent shipbuilders or fabricators who build for a single industry are as varied as those working for multiple industries. They may build vessels for the petroleum, fishing, or recreational industries, or for the military. They may fabricate offshore rigs or platforms or components, such as stairwells or pipes. Small or large, they may work directly for the client purchasing the structure or vessel, or work for other fabricators or shipbuilders.

1.4.2. Classifications Based on Physical Size and Layout of Yards and Facilities[1]

The facilities and yards that make up the Gulf of Mexico fabrication and shipbuilding industry can also be categorized by their size and layout. Waterfront property is generally more expensive and/or difficult to obtain than property with no water access. The first level of organization is determined by whether the facility or yard has water access. Facilities with access range in size from large, well-equipped ones to those consisting of little more than a drydock or a slip. Facilities that do not require water access are more difficult to find. Some are nothing more than a garage attached to the owner's home, while others house multiple structures.

To provide a general sense of the facilities and their layouts, the following composite descriptions incorporate information collected at many yards. Large yards include not only the first-tier shipyards within the study communities, but also numerous large fabrication yards and some of the larger of the second-tier shipyards. Small yards include shipyards that fabricate vessels smaller than 122 meters; deal with small vessel repair, maintenance, or topside repairs; or engage in a diverse array of minor functions (in comparison to the large operations undertaken in larger shipyards). Repair yards are specifically oriented towards repair and/or platform refurbishment operations, are generally larger in overall size, and have specific and significant infrastructural requirements, such as multiple drydocks or deepwater slip and channel access (for vessel repair and rig refurbishment, respectively). Specialty fabrication facilities include a range of small fabricators and machine shops that assemble small and generally specialized components for use in larger structures, such as structural steel components for rigs and platforms, or railings and stairs used in assembly or refurbishment of existing platforms.

[1]Note: This typology omits several other fabrication companies in non-petroleum-related industries.

1.4.2.1. Large Yards

The large yard is equipped with significant infrastructure, has numerous work areas used in a variety of tasks, and sufficient parking for the vehicles of the hundreds or thousands of workers that arrive at the yard each workday. The main yard can be accessed by water and from the road; and it often connects to railroad tracks by one or more spurs. A chain link fence separates the parking area and access road from the yard, and guardhouses sit at each entrance, with some reserved for foot traffic and others for motorized traffic. Water access is available by one or more large drydocks that sit in a slip just off a canal that is connected to a major waterway. Materials storage areas (e.g., plate steel and rolled steel) are located near the water entrance to the yard, and large orders of steel are typically delivered by transport barges, and held for use on the yard in numerous projects and applications. Small cranes are used to feed plate metal into the cutting area where computer numerically controlled (CNC) machines are housed and used to cut metal to the exact specifications required for projects. In some cases, before cutting, the steel is treated in the blast and paint hall located in this area, and the cut and/or painted steel ready for subsequent use in the main production area.

The welding, pipe, electrical, and machine shops are located away from the water. The welding shop is by far the largest, and houses a number of automatic welding machines, which are moved within the shop by large overhead (track) cranes. These cranes are also used to move the plates once they are inside the shop. Nearby trailers and smaller shops are reserved for the use of subcontractors, and often house mobile machinery and other small equipment. Closer to the water rests a large central fabrication building, where component parts and large plates that have been welded together are combined into larger modules, including pipe and electrical foundations. Inside this building the pieces are moved using pulleys and overhead cranes. These modules are moved outside using large gantries or cranes to an uncovered cement slab, where they are assembled into complete or nearly complete end products. These end products (i.e., ships, large boats, and platforms) are launched using the drydock, and outfitting is completed while the ship is tied up to the bulkhead along the waterfront. If the shipyard also engages in repair operations, the drydock is also used to lift ships out of the water for repairs. Scattered throughout the yard are several smaller buildings used for storage, as well as stacks of tubing, piping, steel, and old platforms and platform components (e.g., decks, jackets, and rolled steel legs).

Away from the water but near the entrance with a view over some of the shops and the cement slab, is an office building for upper management and sales, human resources, and other administrators. This building also contains offices that are made available for use by customers. Deeper in the yard is a second office building that houses engineering, quality assurance, craft management, and a small health clinic. These office buildings have dedicated parking lots, which also serve the subcontractors working in the trailers. Behind the buildings along a fence is the training center, a medium-sized metal building divided into classrooms, general training and instruction areas, a number of welding booths, and a few offices.

1.4.2.2. Small Yards

The small yard is directly accessible by state highways or secondary roads, and has waterfront access of no more than 1,000 feet, leading to large channels such as the Gulf Intracoastal Waterway or to small local bayous that eventually connect to larger waterways. A chain-link fence lines the yard’s perimeter, and a manual or automatic gate for vehicular traffic is

open during regular business hours, but locked overnight. Employees and visitors enter the yard and park in a gravel parking lot, which has a single office structure, often of modular construction, off to the side of the main parking area. The parking lot and office may sit outside the fence surrounding the rest of the yard, unless a second exterior fence surrounds the entire facility. The office has a reception area, restrooms, a kitchenette and eating area, and several separate small rooms for administrative and managerial departments, which typically include personnel in design, accounting, human resources, safety, and sales, as well as the president or CEO. On the smallest yards, one individual frequently fills all or most of these roles, so the office may consist of a single room in which the CEO or President meets with clients. However, client-management interactions may be less formal, and frequently take place on the yard itself.

The main facility operations are beyond the office and parking lot, and the yard is laid out to facilitate fabrication or vessel assembly. The supply room, where employees check out tools and materials, is the only area other than the office that is fully enclosed and it may be air conditioned, although located in close proximity to the main work stations. Open-ended aluminum sheds, cooled by industrial fans, protect carpentry, electrical, blasting and painting, and small-component welding and fabrication stations from the elements. These work stations, like the outdoor spaces where larger components and vessels are assembled, may sit on concrete slabs or may have dirt floors. The spaces or work stations, and walkways that connect them, are unpaved. A single crane—perhaps owned or simply rented during project phases when necessary—is likely to be parked in one of the open spaces adjacent to a work area, but will not be in constant operation.

Beyond these work stations, vessels are assembled in waterside work areas from large component parts, typically large hull pieces and cabin and crew deck assemblies. These areas may sit side-by-side, each with waterfront access allowing for the launching of vessels as they are completed, or they may sit end-to-end, requiring completion of the vessel closest to the water before other vessels move into the next-closest-to-waterfront space. Waterfront spaces may have bulkhead areas or small drydocks, or they may simply be dirt-floored spaces from which the vessel is launched.

1.4.2.3. Repair Specific Yards

Repair-specific yards, depending on their size and focus, often have similar layouts to large yards. The primary differences between repair-specific yards and the large or small yards described above are the nature of repair work and the degree of specialization in repair and refurbishment, as opposed to new fabrication. Repair-specific yards have particular infrastructural requirements. Many shipyards, both large and small, have some capacity to repair vessels or ships, or to make topside repairs, but they do not necessarily derive a significant portion of their business revenues from repair contracts. By contrast, the “repair-specific” category emphasizes those yards that derive most or all of their revenues from repair, refurbishment, or salvage operations.

Repair-specific yards exhibit a wide range of characteristics. To capture their variability, the discussion of this category considers includes three main yard subtypes: a multiple drydock repair yard, a rig and platform refurbishment/repair yard, and a ship breaking yard. The following sections elaborate on the unique characteristics of each yard subtype.

Multiple drydock yards: These yards are specifically designed to complete high-volume repairs and, therefore, ease of water access is crucial to their operations. They are typically located relatively close to major waterways, such as the Intracoastal Canal or the Gulf of Mexico

itself. Their multiple drydocks facilitate simultaneous repairs on several vessels, and the largest repair yards, or those oriented toward repairing deepwater vessels, may also have one or more drydocks of sufficient capacity to repair vessels larger than 122 meters (see first-tier and second-tier categories discussed above). In addition, some facilities have slip and bulkhead access, allowing them to perform topside repairs on large vessels (over 122 meters), even if they are unable to perform drydock repairs.

Rig repair or refurbishment yards: Examples of this repair-specific yard subtype are also located relatively close to the Gulf of Mexico. They have good access to large ship channels and are constructed to avoid bridges, power lines, or other obstructions that might block transportation of a rig or platform to the facility. In some cases, rigs or platforms are brought in for a full refurbishment or complete rebuilding, which requires a tear down of component parts (especially railings and stairways) that are exposed to the elements, as well as repair or replacement of essential internal pieces of the platform. Workers blast, paint, and reassemble external pieces while completing internal repairs, maintenance, and updates. Such work may last from a few weeks to a few months or much longer, depending on the extent of the damage or the kinds of necessary upgrades. A few rig and platform repair/refurbishment yards also have a large drydock capable of lifting huge ocean going vessels or platforms, if properly configured. These yards specialize in repairs requiring access to the submerged portions of vessels or platforms—much more extensive repairs that may tie up the yard's drydock for months at a time.

Breaking yards: These large, sprawling facilities exhibit less diversity of infrastructure than similarly-sized fabrication yards, but have significant infrastructure and equipment specific to salvage, breaking, and cutting operations (e.g., large cranes, mobile burning or cutting units, and storage space for scrap metal after breaking). Breaking yards require slip and bulkhead water access for delivering vessels and rigs or platforms to be salvaged, or offloading scrap steel onto transport barges after completion of the cutting and breaking processes. Once larger vessels or rigs or platforms are placed on land, workers cut them into more manageable pieces, which cranes or trucks move about, before barges, trains, or trucks transport the pieces out of the facility. Breaking operations decompose old vessels or rigs or platforms and deliver their end products to a number of different scrap metal or steel salvage buyers. However, depending on the market for used steel and demand for their other products, the breaking yards stockpile vessels and rigs or platforms in various stages of decomposition. As a result, the yards have a jumble of salvage steel, piles of incomplete work, and vessels or rigs or platforms slated for breaking.

1.4.2.4. Small Specialty Fabrication

This category encompasses specialized facilities, which, though generally small in size, engage in highly diverse operations. The operations range from "widget" fabrication for platforms to driveshaft repair and refurbishment for boats. They include machining and metal cutting or preparation and the fabrication of "dumb" yet critical steel components used on rigs and platforms (e.g., stairs and railings, structural load bearing components). These small specialty fabrication and machine shops are integral to the operation of the area's larger yards, and many of them repair or rebuild parts, or fabricate new or replacement components, used in other local yards or in fabrication projects elsewhere along the Gulf Coast. The shops, covered and cooled, contain a number of specialized machines (e.g., computer numerically controlled [CNC] machines and press breaks) used in the production process. Typically small, the shops do not require direct water access (although some do have access), and they employ a limited number of highly-trained workers who are able to operate one specialized machine or several.

Certain shops also employ welders and fitters to assemble the machined pieces into components for use in other fabrication yards, while some produce parts directly.

1.4.3. A Functional Approach

The categories described above help to illustrate the diversity of yards and facilities operating along the Gulf Coast. However, assigning actual yards or facilities to those categories proved difficult, due to the highly dynamic nature of the shipbuilding and fabrication industry. Throughout the study period, the size and ownership of yards and facilities changed in response to both external factors, such as demand for their services and products, the cost of steel and other materials, and shifting access to labor supplies, and to internal factors, such as changes in ownership, other personnel changes, and shifts in managerial roles. The cyclical nature of contracts and available work meant that, for many yards, the reported numbers of employees was only a snapshot of their current workforce at that particular moment, because yards often added employees to accommodate sudden workload increases, but laid employees off when the workload inevitably tapered off.

Yet the type of work done at each location was more stable. Therefore, the research team assigned yards and facilities to one of four categories: (1) yards that service or fabricate only rigs and platforms; (2) yards that service or fabricate rigs, platforms, and vessels; (3) yards that service or fabricate only vessels; and (4) small specialty shops. The locations of these yards and facilities were then mapped to provide a general sense of the nature and extent of the industry in each of the study area's communities (see maps throughout this volume).

1.5. CLASSIFYING EMPLOYEES AND THEIR WORK

Social scientists have discussed and debated the changing structure of the labor market in the U.S. and other countries for decades (see Chapter 2, Volume III). Within a labor market, employees generally exchange work for wages. Yet labor markets are identified and defined for specific industries by geography; education, licensing, or certification; and occupation. Dual-labor market theory, developed during the 1960s to explain the persistence of discrimination and unemployment among economically disadvantaged groups, has served since then as the foundation for attempts to understand and explain all U.S. labor markets (Doeringer and Piore 1971; Piore 1970, 1975; Bulow and Summers 1986; Rebitzer and Taylor 1991). This theory, subsequently revised and relabeled "segmentation theory," identifies two distinct segments of the labor market, primary and secondary, based on the quality of the jobs in each (Dickens and Lang 1988). The primary labor market produces primary or "good" jobs, while the secondary market produces contingent or "bad" jobs. Filling "good" jobs are core workers, who are fully integrated within the corporate entity, and have a strong affiliation with their employer who treats them as if they have a significant stake in the company. Holding "bad" jobs are contingent workers, who are not fully integrated within the corporate entity, have a weak affiliation with the company and show no long-term attachment to it, and do not have job stability (Belous 1989). Core workers have an implicit contract with their company that, if they follow certain rules and norms and meet certain standards, their employers will provide job security and opportunities for advancement, conditions lacking in the contracts (explicit or implicit) for most contingent jobs.

Between the primary and secondary labor markets lies an intermediary segment comprising "mediocre" jobs that combine aspects of jobs in the primary and secondary segments. For example, jobs in Gordon, Edwards, and Reich's (1982) "primary subordinate" segment include

the high wages and protected status of primary-segment employment but do not require the same level of education or recognized skill. According to Hudson (2007), jobs in the intermediary labor market often have better wages than jobs in the secondary labor market, but often lack health insurance, retirement benefits, or both. Thus, the main features distinguishing employment in the primary and secondary labor markets are wages and fringe benefits, working conditions, employment stability, and opportunities for advancement within the firm, as well as equity and the nature of supervision.

Segmentation theory asserts that labor market equilibrium is characterized by an excess supply of qualified workers for primary jobs, leading to limited mobility between the primary and secondary markets, and workers who are qualified for primary jobs but stuck in secondary or contingent jobs. Factors that have been identified to explain this equilibrium include differences in the ability of corporate managers to monitor employee output and uncertain demand for goods or services. Corporations use higher-than-competitive wage premiums in the primary labor market to maintain high levels of work intensity among employees, Bulow and Summers (1986) argue, particularly those who are difficult to monitor. Rebitzer and Taylor (1991) observed that firms facing uncertain product demand retain employees in primary jobs during periods of low demand and use contingent workers as a buffer of last-hired, first-fired workers, thereby reducing the probability of layoffs for primary workers. They conclude therefore that "the marginal cost of contingent labor is less than the expected marginal cost of primary workers when the firm uses layoffs to adjust to demand fluctuations. We thus have a rather striking outcome: firms may hire both primary and contingent workers even when contingent workers are being paid less than primary workers and the two types of workers are perfect substitutes in production" (p. 1381). In the end, firms may choose to hire only primary workers, only contingent workers, or some of each.

While segmentation theory provides some insight into labor markets within the U.S., scholars, such as Heibert (1999), have argued that a labor market, both in its entirety and in its many sub-markets, is more complex than segmentation theory would lead one to expect. Hudson (2007), in a recent analysis, observed that since the early 1970s the level of dualism in the U.S. labor market has increased substantially but that most workers who begin their careers in the secondary jobs eventually obtain better jobs so that most of the workforce beyond young adulthood is divided between primary (good) and intermediary (mediocre) jobs. He also concluded that nonstandard work and citizenship have come to play a greater direct role in allocating workers to secondary and intermediary jobs than race or sex. Segmented labor market theory generally assumes that immigrant workers, who are often drawn to job opportunities in expanding industries or to those in declining industries that are being abandoned by native-born workers, will be concentrated in the lowest level secondary jobs (Piore 1979; Hudson 2007). In accepting low wages in these industries, the immigrants enhance their competitive position.

The BARA research team's effort to categorize workers in the Gulf of Mexico fabrication and shipbuilding industry draws on labor market segmentation theory. At the same time, it recognizes that employees' placement within the labor market may depend on many factors, including skill-related attributes, such as experience and schooling (human capital, cf. Schultz 1961), and access to and position within social networks (social capital, cf. Bourdieu 1986). The team readily acknowledges that neither employers nor employees act in fully rational ways and that particular groups, such as immigrants, often face special problems in having their skills recognized. The industry is characterized by cyclical and uncertain product demand as well as variability in the ability of corporate managers to monitor employee output, so it is not surprising

that both primary and contingent jobs are common in this industry, even within a single firm. Due to the complexities of contracting and subcontracting within the industry, firms that create primary jobs include not only those that fabricate vessels, platforms, and component parts, but also large, stable contracting companies that provide workers to the fabricators and shipbuilders.

The following sections describe core and contingent workers, noting the wide variation within each category in terms of an individual's relationship to the workplace. In addition, during the study, firms were hiring a particular group of contingent employees—immigrant guestworkers using temporary H2B visas—in large numbers, and received lots of attention from policymakers, labor advocates, and journalists (see also Chapter 2, Volume III). Some shipbuilding and fabrication companies are staffed entirely by core workers, while others employ a mix of workers including both contingent workers and guestworkers. The discussion considers guestworkers separately, because labor market segmentation theory has generally ignored them.

1.5.1. Core Employees

Core employees fill many positions in the shipbuilding and fabrication industry, and include craftspeople, managers, engineers, and administrative and clerical workers. Relationships between these employees and their companies vary considerably across communities and companies. In general, good work habits are considered critical for all employees, but showing up for work consistently and on time, passing random drug screenings, the desire to advance, having a "team player" mentality, and a sense of company loyalty, are stressed as particularly important, especially for employees deemed long-term, critical components of a given company, as "core" employees are.

Most craftspeople were members of communities within the Gulf of Mexico region and, in addition to a strong work ethic and good workplace habits, craftspeople are generally expected to possess technical skills before being hired as core workers. Large yards recruit first-class craftspeople for skilled (core) labor positions, unless the yards offer in-house training programs or another means by which workers may progress from unskilled or semi-skilled positions to skilled ones. Some yards and smaller fabrication shops choose to hire workers with lower skill levels, or even no skills at all, in order to train them on the job in skills that are specific to their company's product or workflow, rather than compete for workers who already have training and/or credentials. The types and periods of training completed by core workers varied widely (see Chapter 4, Volume III). At some yards, only on-the-job training was available to workers, whereas other yards sponsored organized training programs or paid apprenticeships that could extend for several years.

Some craftsmen reported that they sought advancement to positions in training, management, design, or engineering, while others described a preference for continuing to do skilled/hands-on work as craftspeople. Core employees, yard owners and managers hope, possess some degree of company loyalty and therefore longevity as employees. Although many craftspeople had worked for the same company for decades, some were very mobile, changing jobs frequently to move to higher-paying positions or those with better benefits, working conditions, or location. The vast majority of the craftspeople in the study communities were not involved with unions or other labor organizations, and even in communities with union yards and shops, these exist alongside non-union facilities or "merit shops."

Managers, engineers, and employees in administrative positions generally had good benefits, and many had been with their companies for long periods of time, although there was some degree of turnover on larger yards, especially during down times in the industry, or when a large

company would change ownership and/or management structure. Training programs exist for employees in these positions, but they are rare, and most yards noted that they hired trained only employees.

Clerical workers also tended to come from within the Gulf of Mexico region and, although female workers were relatively rare across the industry, women filled many of the clerical, administrative, and human resource positions. Managers expressed a preference for trained workers, but few companies offered training for their clerical or administrative staffs. They instead relied on local vocational training programs, community colleges, and temporary labor services to provide the skills needed by people in these positions.

1.5.2. Contingent Employees

Contingent employees are those who work for an organization on a non-permanent basis, also known as freelancers, independent professionals, temporary contract workers, independent contractors, or consultants. The phrase "contingent work" was coined by Audrey Freeman at a 1985 conference on employment security and used to connote "conditionality" (Polivka and Nardone 1989). The proportion of workers, and the types of positions they occupy in the fabrication and shipbuilding industry, have expanded since the early 1990s. The key reasons for increasing reliance on contingent employees, according to employers, were the challenges of finding workers willing and able to perform the work required on the yards, as well as the need to increase and reduce their workforces.

1.5.3. Guestworkers

A specialized group of contingent workers are those who come from outside the United States to fill particular jobs for specified time periods. A number of fabrication companies and shipyards in the study communities employed guestworkers, known as H-2B workers, during the study period (see also Chapter 2, Volume III). These individuals are foreign workers authorized to work in the United States with a temporary H-2B visa for non-agricultural labor. They may work for and be paid directly by the shipbuilding or fabrication company, or work through a labor-contracting company. Companies unable to find enough workers when contracts or local labor shortages sharply increase typically seek H-2B workers. Some companies also reported hiring H-2B workers while working on a project that involved a specific technical skill, such as an infrequently used welding process for which few local employees were trained or willing to perform. H-2B workers must work, by definition, for a temporary time period, specified by law as less than a year, with the opportunity for extensions of up to three years. Most visas are valid for between four and 10 months.

During the study period, shipbuilding and fabrication industry H-2B workers in the Gulf of Mexico came from countries across the globe, including Mexico, the Philippines, Vietnam, India, and Romania. Workers of other nationalities were present, but less frequently encountered during fieldwork for the study. A majority of the H-2B workers were men with some form of specialized craft training. The ages of the H-2B workers varied, ranging from the early-20s to the mid-50s. Most H-2B workers had in-country experience in the shipbuilding and fabrication industry or in the related oil and gas industry, both on and offshore. Many had worked as guestworkers in countries other than the United States before accepting their positions in the Gulf of Mexico.

H-2B workers were expected to be skilled craftpersons before their employment and, even when employers had overseen their recruitment and selection (as opposed to going through a labor contractor), the employers generally worked with agents abroad who were responsible for the pre-contract screening and testing. In most cases, though, the H-2B workers also had to pass hands-on skill tests prior to starting a new position. Some employers included the H-2B workers in their on-site training, while others encouraged them to participate in training programs at local technical schools. Still others employers would send the workers back to their home countries if they deemed the workers' skills inadequate.

Once on the yard and working, an H-2B visa holder was described by most employers as "just another worker"; company managers and foremen argued that they tried to treat them like every other employee. There are inherent limitations to this approach, however, because the H-2B worker cannot remain employed with the company for more than a few years (though that is considered a long tenure for craftspeople in many companies, regardless of their origins) and because the workers are generally not offered incentives or avenues for promotion. Furthermore, language barriers can pose significant problems for H-2B workers, their peers, and their bosses. Some employers held bilingual management and safety meetings, while others employed specially tailored language programs, such as "Command Spanish," which purports to be "the country's leading provider of occupational Spanish language training materials and programs for the workplace" (Command Spanish, Inc. 2009).

1.6. CLASSIFYING OCCUPATIONS

Tens and hundreds of thousands of people are employed by shipbuilders or fabricators, and these individuals fill numerous occupational positions on the fabrication and shipyards, as well as in company offices. The Census of Manufacturers has been conducted every five years since 1967, for years ending in "2" and "7." In 1997, based on data concerning approximately 700 shipbuilding and repairing yards, both first-tier and second-tier facilities reporting under SIC code 3731, the value of shipments from these yards was $10.6 billion. The industry, described as labor intensive, had a 1997 workforce of 97,385 employees, who received a payroll totaling $3.4 billion (The Louis Berger Group, Inc. 2004). In 2002, though the number of yards had declined to 642, representing the first-tier and second-tier facilities reporting under NAICS code 336611, the value of shipments from these yards had increased to $12.8 billion. Its workforce, down to 87,355 employees, received a payroll totaling $3.6 billion (U.S. Census Bureau 2002).

Table 1.2 provides a more detailed look at the industry and incorporates occupational categories that are created and defined by the U.S. Bureau of Labor Statistics within two systems. The first is the 2000 Standard Occupational Classification (SOC), the system used by Federal statistical agencies to classify workers into occupational categories for the purpose of collecting, calculating, or disseminating data (BLS 2000). The second is the Occupational Employment Statistics (OES), the program that estimates the number of people employed in over 800 occupations and the wages paid to them (BLS 2009). Companies hire employees in these occupations as needed. They may employ hundreds of welders but only one Human Resources Director. They may hire separate individuals to perform different types of welding or cutting, or they may employ a single individual to handle safety, training, and Human Resources functions. However, in a small shop with only three employees, there may be no need for people in many of these categories. The table below gives a sense of the diversity of occupations involved in the fabrication or shipbuilding industry.

Table 1.2.

Occupational Categories and Descriptions within the Shipbuilding and Fabrication Industry, Mean Hourly Wages for Ship and Boat Building, May 2008

Occupational Category	Description	Mean Hourly Wages
Material Operations – Physical Work and Material Operations on the Yard		
Welders, Cutters, Solderers, and Brazers OES 93914 SOC 514120	Welders and cutters use welding techniques such as arc, plasma, or flame to cut metal plate into precise pieces based on blueprints and designs. Workers in this craft category are considered highly skilled because the cut pieces they produce and use must form structurally sound units when welded together. When automated welding is employed, a welder must still supervise the machines in operation (often with the assistance of a helper). As they work, welders must attend to the quality of the welds they make.	$17.91
Shipfitter OES 89121 SOC 512040	Shipfitters (or fitters) lay out the metal pieces cut by cutters in preparation for tacking and welding. They may make minor adjustments to cut pieces for fit if necessary, using hand torches or other techniques, or they may identify unusable cuts and request the welder/cutter make new pieces. Fitters may supervise tackers, or they may do the tacking themselves.	$17.67
Tacker	Tackers produce temporary, or “tack” welds, which hold component items in place until a skilled welder produces the permanent weld. Typically supervised by a fitter, tackers use wire feed or rod techniques to do continuous flat or vertical welding of plate and structural steel. Tacking is an entry-level position for people who often have little-to-no experience or training, but who are likely to develop career skills in fitting and welding through informal or formal mentorship, or formal training programs.	No data
Painter OES 92947 SOC 519122	Painters mask equipment or other areas that are not to be painted, paint, and check to make sure that the paint job is complete. Painters use sprayers, brushes, and rollers, along with portable ventilators and exhaust units in the course of their job. Painters wear a full body suit and hood that has a clean air source, heat, and air conditioning. Painters also do stenciling and some specialists may also do more artistic designs and paintings.	$17.60
Sandblaster	Blasting is more commonly seen in the cleaning and preparation of component parts of a platform or vessel that have been disassembled for cleaning, repair, or refurbishment. Under ideal circumstances, the blasting takes place in an enclosed or protected area (interior warehouse or shielded by a fine mesh fencing) to limit overspray, and workers wear a full body suit that protects them from the bodily effects of abrasive materials. Depending on yard size, there may be designated areas for blasting and workers who are designated full-time blasters.	No data

Table 1.2.

Occupational Categories and Descriptions within the Shipbuilding and Fabrication Industry, Mean Hourly Wages for Ship and Boat Building, May 2008

Occupational Category	Description	Mean Hourly Wages
Crane and Other Heavy Equipment Operators	Heavy equipment operators within shipyards are responsible for utilizing a variety of powered equipment to lift or move materials from one place to another. In addition to their operational capacities, they may be responsible for maintaining and routinely inspecting their equipment and overseeing the loading and unloading of materials onto equipment. Depending on their specific designation, they may utilize cranes, hoists, winches, or hydraulic booms, or forklifts and elevated platforms to move materials.	Crane and tower: $21.38 Hoist and winch: $17.23 Industrial truck and tractor: $16.54
Ship Carpenter and Joiner OES 87102F SOC for carpenters 472031	Ship carpenters and joiners install cabinets, walls, floors, furniture, doors, and all the other accoutrements that make the interior spaces of the vessel function like a home or office. This includes insulation of pipes and bulkheads. Though many of the skills are similar to non-marine carpentry, the requirements and the finished product are quite different and may require welding skills.	Carpenters: $7.98 Cabinet Makers and Bench Carpenters: $15.19
Electrician SOC 472111	Electricians are involved in a number of different tasks, including cable pulling, layout wiring and hook-up, and testing and troubleshooting.	$20.23
Helper	Helpers provide general-purpose labor. They often lack specialized training and frequently answer to the skilled or semi-skilled workers who depend on them for basic tasks such as holding materials in place during welding or cutting or retrieving supplies or materials. They may also be involved in general yard work such as moving or unloading supplies, cleanup, or running errands for workers or management.	Varies, but about $11
General Maintenance	Those working in general maintenance serve many different capacities, including general janitorial and grounds clean-up.	No data
Leaderman/ Foreman	These workers serve as intermediaries in the project and company management hierarchy. Leadermen supervise small crews, and foremen supervise a sector on the yard that contains a group of leadermen-led crews. In addition to on-site project management and supervision, they link with company leadership and provide a conduit for communication between ownership and workers.	
Machinist Marine Maintenance Machinists OES 85116A SOC 514041	Machinists are responsible for repairing and installing mechanical equipment aboard marine crafts and in fabrication shops and shipyards in general. Their work requires very technical and precise machine work to size pipe, thread it, and put in any additional features necessary, or to level and ensure the machines are secured in the correct position. While some of this work can be computerized, for small orders or repairs the work is primarily completed by hand.	$19.30

Table 1.2.

Occupational Categories and Descriptions within the Shipbuilding and Fabrication Industry, Mean Hourly Wages for Ship and Boat Building, May 2008

Occupational Category	Description	Mean Hourly Wages
Security	Most yards have some sort of security perimeter, from a simple fence to more elaborate systems of checkpoints where visitors and employees sign in and out, staffed by guards who monitor the comings and goings of the yard. The regulation of entry and exit of the yard acts as a system of both security and safety, as it prevents the lost or the curious from wandering onto the yards, and it keeps visitors, employees, or clients in approved areas.	No data
Translator	Translators are a crucial bridge between the typically English-speaking management or safety personnel and the workers on the yard who may not be proficient in the English language. They may act in official (e.g., formal translation during safety meetings) and unofficial capacities (e.g., translation during the course of regular work in the yard).	No data
Cutting and Salvage Cutting workers SOC 51-9030	In salvage or breaking work, cutters are typically involved in taking large pieces of structural steel and breaking them down into pieces that can easily be transported or melted down for subsequent use. Their work typically requires less precision than that done by regular cutters (OES 93914, SOC 514120)	No data
Project Management – Supervision of Project and Material Operations		
Cost Estimator OEC 21902 SOC 131051	Cost estimators work closely with other members of the design and project management team, and one of their primary tasks is to assess the potential costs of a particular job, including labor, materials, transport, and delivery (if applicable). Estimators consult prior work orders and reports to determine estimates of potential costs that include calculations of labor-hours and quantities of materials, often to a level of precision that can be reduced to specific steps in the construction process.	$28.13
Trainer	Instructors or training personnel (frequently only found on larger yards) include administration and subsequent inspection of weld tests for prospective employees, further development of existing (or prospective) employees so that they have the skills required for work on the yard. Instruction can come in the form of group or classroom learning, but more often takes place in a welding shop where instructors assist in the development of adequate welding skills prior to sending employees to work.	
Marine Engineer and Naval Architect SOC 172121	Marine engineers and naval architects help to design, construct, and maintain vessels (BLS 2007). Designers and marine architects create and troubleshoot the plans for the vessels out of the engineer's schematics. These plans are used in both new construction and repair. Though in the past all of the drawing was by hand, today most designers use computer programs. The majority of design work occurs in an office, except when drawings are created for repair the designer or architect will go onto the vessel to assess its current state.	$37.50

Table 1.2.

Occupational Categories and Descriptions within the Shipbuilding and Fabrication Industry, Mean Hourly Wages for Ship and Boat Building, May 2008

Occupational Category	Description	Mean Hourly Wages
Clerical Operations		
Secretary and Administrative Assistant	Administrative and secretarial services include general recordkeeping and filing, mailing, telephone and office reception, executive assistance, and other housekeeping issues.	No data
Leadership	In every company one individual, or a small group of partners, is ultimately responsible for the final decisions made about staffing, sales, purchasing, scheduling, and situations that may arise within the company or at the shop or yard. The structure of this leadership is determined by whether the company is a corporation, a limited partnership, or a sole proprietorship	No data
Accountant and Bookkeeper	In-house accountants or bookkeepers are responsible for payroll, budgets, and documenting the credits and debits to the company to track profit and loss.	No data
Sales, Public Relations, and Community Relations Personnel	Sales and public relations employees are typically involved in the beginning and end of vessel and component production, as well as more philanthropic projects and other yard publicity (e.g., vessel christenings). They advertise for customers in trade magazines and trade shows, or by contacting potential clients directly. They are also involved in helping to coordinate between potential clients and the company personnel who are involved in bidding and contract negotiations.	Varies, but about $29
Purchasing and Procurement	Those working in purchasing and procurement capacities may be involved in the preparation and evaluation of requisition orders for parts, tools, and other necessary supplies and equipment for specific jobs or in the general maintenance of the yard. They may also work closely with various product venders.	No data
Medical	Some companies employ full time medical personnel and others employ safety personnel whose duties include provision of temporary and emergency medical services. On-site medical care is generally limited to first aid type treatment of minor injuries and incidents, from which the injured person can return to work after treatment, or to triage/trauma medical care until the worker can be transported to the relevant medical establishment.	No data
Union Representatives	Yards with unions have union representatives. These individuals are the intermediaries between workers and management. Their duties may include arbitrating disputes, monitoring and enforcing regulations, and, when such a program exists, co-organizing training programs in collaboration with company officials.	No data

Table 1.2.

Occupational Categories and Descriptions within the Shipbuilding and Fabrication Industry, Mean Hourly Wages for Ship and Boat Building, May 2008

Occupational Category	Description	Mean Hourly Wages
Human Resource Professional	Human resources (HR) managers and professionals are responsible for recruitment and hiring, training and development, salary and benefits administration, and employee relations. HR personnel may contact local welding schools to inquire about possible workers, work with recruiters and labor contractors to find workers, and conduct other types of employment outreach (e.g., interact with local labor offices, post new jobs on websites, answer questions about employment).	No data

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2. SOUTH MOBILE COUNTY

2.1. INTRODUCTION

Mobile County, in the far southwestern corner of Alabama, incorporates agricultural communities to the north and west, maritime communities to the south and east, and the urban hub of the City of Mobile. Of interest to this study are two cities, Mobile and Bayou La Batre, and four unincorporated communities—Theodore, Irvington, Grand Bay, and Coden (Figure 2.1).

Figure 2.1. South Mobile County and surrounding areas.

This map was created in 2011 using data packages included with the ArcGIS software suite. Sources used to create these data layers included: ArcWorld/ESRI, National Atlas of the United States, Tele Atlas, U.S. Bureau of Transportation Statistics, U.S. Census, and U.S. Geological Survey.

The Mobile area has been home to maritime-related trade and boatbuilding for more than three centuries since Europeans took up the practices in the 1700s. Trade increased significantly during the early part of the 19th century with the expansion of the local shipping channel.

Whether on steam-powered wooden ships or diesel-driven vessels of welded steel, almost every kind of commodity has passed through the Port of Mobile: from cotton to elephants, from oil to African slaves, from grain to whiskey. The waterfront city has been home to groups ranging from early Native American, Spanish, French and English settlers to the recent influx of Southeast Asian and Hispanic immigrants who work in the area's maritime industries.

Maritime activity initially began in Mobile Bay with a shallow ship channel. After the channel was deepened in 1826, the movement of boats and ships became easier, and trade subsequently accelerated (Summersell 1949). Continued improvements meant Mobile was on track to becoming a pivotal port in the United States. The onset of World War I spurred an increase in shipbuilding efforts, although, due to inadequate infrastructure, few ships were actually produced for use in the war. The opening of the Alabama State Docks in 1928 spurred the area's maritime success in the 1930s, but it was during World War II that Mobile truly became a city centered on shipbuilding. Mobile shipyards built numerous destroyers, cargo vessels, and minesweepers; an average of one ship a week left the port for duty (McLaurin and Thomason 1981). Gulf Shipbuilding Corporation and Alabama Drydock and Shipbuilding Company were dominant early players in the shipbuilding and fabrication industry in the area.

In the 1950s, Mobile's shipyard activity declined, a pattern seen across the United States. Even though mothballed fleets were brought out and readied for the Korean War, by 1954 only eight major U.S. shipyards were active (Mobile Register 1954b). But the post-war world offered new local and international opportunities for shipbuilders as the Gulf of Mexico oil industry expanded. Mobile's yards grew rapidly with the oil boom, but the sharp fall in oil prices during the 1980s affected shipyards all along the Gulf Coast, including those in Mobile. Since the late-1980s, however, several of the Mobile area's mid-size to large shipyards have been developed and restructured, and an expansion of its shipbuilding industry has occurred. For example, Mobile has become home to several of the Gulf's major shipbuilders, including Austal and Atlantic Marine. The shipyards and fabrication yards or shops have been important features of Mobile's waterscape and landscape, especially along Mobile Bay, providing employment for generations of Americans and immigrants. Today's shipbuilding and fabrication industry operates within a varied economic context and faces challenges, in terms of labor recruitment and characteristics of employment, from other established and emerging industries and businesses in the area. Nevertheless, Mobile's shipbuilding and fabrication companies remain an essential part of the local culture and economy and that of the larger, global shipbuilding world.

Outside the urban area, Bayou La Batre and Bayou Coden belong to Alabama's "French Coast," located on the Mississippi Sound and nestled along the bayous that bear their names. Bayou La Batre, locally known simply as "the Bayou," was founded on part of a Spanish land grant in 1786 by Joseph Bosarge, a Frenchman. Although the Bayou was the first permanent settlement on the south Mobile County mainland, it was not legally incorporated as a city until 1955. The city billed itself the "Seafood Capital of Alabama" and is well known as a premier site for the construction of fishing vessels. Yet, the Bayou is perhaps better known as the setting for scenes in the 1994 movie *Forrest Gump* and for the pirate ship built in the local Steiner Shipyard for Walt Disney Studio's *Pirates of the Caribbean: Curse of the Black Pearl.* Coden, too, was a tourist destination and resort community in the late-1800s and early-1900s. A 1906 hurricane destroyed much of the community, causing residents to relocate further inland. After Hurricane Katrina in 2005, residents of Bayou La Batre and Coden moved north, many settling in Irvington.

In contrast to its bayou neighbors, Grand Bay began as an agricultural community. Situated at around 50 feet above sea level, but with no usable waterfront, the town did not develop maritime industries. Instead, it grew in the 1870s with the development of the railroad, which gave access to agricultural markets in New Orleans and along the Mississippi River. Grand Bay, too, attracted tourists at the turn of the 20th century, but today its farms have largely been replaced by residential developments. Like Irvington, Grand Bay is a bedroom community for Mobile and Pascagoula.

2.1.1. General Description

The City of Mobile, founded in 1702, is located on Mobile Bay 31 miles from the Gulf of Mexico, and has the distinctions of being the site of Alabama's only seaport and its oldest city. Alabama has generally been characterized as a prototype Deep South state, where a ruling white elite kept taxes low to benefit property owners, supported few state and local services, championed white supremacy to maintain racial solidarity, and promoted economic development as long as it maintained the status quo. Mobile reflects this legacy. Nevertheless, the city has attracted people from diverse backgrounds and cultures, a fact that distinguishes it from much of the rest of Alabama, and it is the largest metropolitan area along the U.S. Gulf Coast between New Orleans, Louisiana and Tampa, Florida.

Historically, the timber and chemical industries, and military services, have been important to the city's economy. Timber grew to be the area's dominant industry around the turn of the 19th century, and supported a robust paper and pulp industry through most of the 20th century. It remains a minor but important industry today. Shipbuilding and fabrication brought huge numbers of workers into Mobile during World War II. After the war, Brookley Field, an air supply depot, became the state's largest employer and retained the position until its closure in 1969, the year in which the Mobile Chamber of Commerce also issued tax-free industrial development bonds to attract industry to the site. After the discovery of natural gas in Mobile Bay in 1979, the oil and gas industry assumed an increasingly important role in the regional economy, although many operations have been hindered by technical and schedule problems (Wade, Plater, and Kelley 1999).

In recent years, several major economic sectors in downtown Mobile and surrounding areas have undergone considerable expansion. The service sector constitutes the largest portion of the Mobile economy, accounting for 83% of employment in the area. Several other industries, including aerospace, oil and gas, and shipbuilding and fabrication, have grown as well, contributing to diversification of the region's economy. After reopening in 1982 on the site of Brookley Field, the Brookley Complex has housed more than 100 companies and has been central to the growth of the area's aerospace industry. Construction of the ThyssenKrupp steel and stainless steel processing facility 30 miles north of Mobile provided jobs for some skilled craftsmen, before being placed on hold due to economic conditions. The ThyssenKrupp facility was expected to employ 2,700 people when it opened (Underwood 2009), but employed only 1,800 when it became operational in 2010 (ThyssenKrupp 2010).

This diversified industrial environment distinguishes Mobile from some other locations along the Gulf Coast and creates challenges for companies seeking to acquire and maintain a labor force. At the same time, the significant industrial presence has enabled the development of community training programs lacking in many other areas along the Gulf.

Theodore, southwest of Mobile on the western shore of Mobile Bay, lies in an area of south Mobile County which, by local choice, is unplanned, unzoned, and unincorporated. A homeport

was built on the Theodore Ship Channel to berth ships for a proposed expansion of the naval fleet, which instead was reduced. The base, constructed at substantial local expense, was never staffed and was for rent when fieldwork for this study was conducted.

2.1.2. Principal Ports and Key Infrastructure

The area's ports are central to Mobile's economy and have been so since the founding by French explorers in 1702 (Figure 2.2). The two major port facilities are the Port of Mobile and Mobile Middle Bay Port (located on the Theodore Ship Channel); both are operated by the Alabama State Docks. An approximately 37-mile channel with a 45-foot depth serves the Port of Mobile. Additional channels in the region that provide coastal access include the Theodore Ship Channel (depth of 40 feet), Bayou La Batre Channel (18 feet), and Port of Chickasaw Channel (25 feet). The Theodore Ship Channel is notable because, as of 1999, it was the only deep water access available to the natural gas industry in coastal Alabama. Businesses along the channel also provide support services for offshore producers (Alabama State Port Authority 2009a).

Figure 2.2. Port of Mobile and nearby harbors.

The map was created in 2011 using data packages included with the ArcGIS software suite. Sources used to create these data layers included: ArcWorld/ESRI, National Atlas of the United States, Tele Atlas, U.S. Bureau of Transportation Statistics, U.S. Census, and U.S. Geological Survey.

The Port of Mobile, owned and operated by the Alabama Port Authority, is the only deepwater port in the State of Alabama and the 10th largest deepwater port in the United States. The port occupies 4,000 acres and has four million square feet of warehouse storage. It also has 37 berths and features 45 feet of channel depth to the tunnels, along with 40 feet in the River

Harbor. The Port of Mobile has access to two major highways and a major railroad. Its estimated revenue for 2008 was $120 million (Alabama State Port Authority 2009b). In 2007, the port handled 18.02 million tons. Since 2000, nearly $500 million has been spent on expanding the port, a considerable portion of the expenditure going to construction of the Mobile container terminal and a new warehouse space. Construction on the terminal, begun in 2005, was completed in 2008 and the facility, APM Terminals Mobile, opened in September (APM Terminals Mobile 2011).

The Mobile Middle Bay Port, located in Theodore, occupies 200 acres and has a 36-foot draft and 600-foot Finger Pier. The Marine Liquid Bulk Terminal, also located in Theodore, features a 1,100-foot pier, 40-foot ship depth, and 12-foot barge depth. In 2007, this terminal received a tonnage of 1.2 million. The Middle Bay Port is home to Aker Solutions, one of the area's major employers (Alabama State Port Authority 2009c; Gulf State Shipbuilders' Consortium 2008). The Mobile region also includes the Bayou La Batre Channel, which has a depth of 18 feet, and the Port of Chickasaw Channel, whose depth is 25 feet. The Theodore Ship Channel, about 15 minutes from downtown Mobile, is the closest deepwater channel to South Mobile, with a 40-foot draft and a 1,000-foot turning basin.

2.1.3. Current Industrial Profile

Mobile's economy once relied heavily on the paper and chemical industries, but the economy has become much more diverse in recent years. The chemical industry still has a significant presence, employing 27% of workers in manufacturing, but it is not perceived by many local residents to be one of the area's premier industries. Alabama has become very proactive in its efforts to attract businesses, often offering large incentive packages and highlighting relatively low wages. Companies are also attracted by Alabama's status as a right-to-work state. The relocation of several car manufacturers to the area north of Mobile is one recent economic development cited as crucial by many involved in economic and workforce development in the area. The continued growth of the aerospace industry centered in the Brookley Complex, winning the bid for the ThyssenKrupp steel mill, and the opening of the Austal shipyard were hailed by local business owners and officials promoting diversification as further bolster a varied industrial climate. At the same time, service sector growth, and the increased promotion and pursuit of higher education have prompted concern from some local industry managers and workers in local industries, including shipbuilding and fabrication, regarding the future of skilled labor in the area.

The Mobile area's aerospace industry has been growing since the early-1990s, and the trend has accelerated in recent years. In February of 2007, Airbus opened an engineering center in the Brookley Complex specializing in the construction of wide-bodied commercial jets. Two major potential plane manufacturing projects involve Airbus' parent company, the European Aeronautic Defence and Space Company (EADS). The first is a joint bid with Raytheon for a $3 billion defense contract to build cargo planes for the U.S. Army and Air Force. In the second project, EADS would be the chief subcontractor for Northrop Grumman on a $40 billion contract with the U.S. Air Force to build mid-air refueling tankers (KC-30s). They proposed to build a $600 million assembly plant at the Brookley Complex, which would generate 1,500 local jobs. This second project was dogged by controversy for years. Northrop Grumman beat out Boeing in 2008 to acquire the contract, but was soon stripped of it soon after a review by federal auditors declared the Air Force's selection practices to be illegitimate. In September 2009, Defense

Secretary Robert Gates reopened the bid for competition and a winner was expected to be announced by the summer of 2010 (Talbot 2009).

The ThyssenKrupp steel processing facility has drawn significant attention from various quarters in Mobile and from outside this immediate area. Mobile County won the bid over another proposed location in Convent, Louisiana and the facility was to generate 2,700 permanent jobs, with the average worker earning around $50,000 a year (Talbot 2009). Construction began at the facility, but was then delayed, and finally put on hold due to the poor state of the economy (Burch 2009; Amy 2009; Underwood 2009). The facility has also had to contend with protests from local labor organizations and media outlets concerning alleged employment of undocumented immigrant workers during the construction phase (The Building Trades 2009). Shipyard management and workers were divided on how the steel mill's opening would impact the local workforce, but both agreed that the main effect would be on those entering the workforce rather than on current industrial workers (PP056 2008, PP057 2008, PP058 2008, PP059 2008).

Several liquefied natural gas (LNG) facilities (see Appendix B) were proposed for Mobile Bay and have been a point of contention. ConocoPhillips withdrew its application for its Compass Port LNG facility, due to strong opposition from the public and Governor Bob Riley to the proposed open loop system. After revising the design, TORP Technology has proposed a closed loop system that has gained support from area environmental and business groups (Mobile Baykeeper 2009; Raines 2009).

Mobile also strives to reach beyond heavy industry. The area underwent many changes during the 1990s and the 2000s and today the city's bustling downtown exhibits few signs of the old industrial base. Around the turn of the century, the downtown and waterfront were restructured with the intention of eventually turning the space into a tourist, commercial, and entertainment complex. The Mobile Convention Center opened as part of a general community revitalization program in 1993. The tourism industry was also bolstered by contracts with cruise ships operating out of Mobile Bay, though service has since been cancelled (Young 2011).

Mobile County's yards are representative of three of the four types of yards discussed in the first chapter of this volume: yards that service or fabricate only vessels, yards that service or fabricate both vessels and rigs or platforms, and small specialty shops (Figure 2.3). The Mobile Chamber of Commerce reports feature the shipbuilding and fabrication industry as an important facet of the local economy (Mobile Area Chamber of Commerce 2008). The area's larger yards are clearly demarcated on major local highways, signifying their local importance. However, once one moves off the highway, the shipyards are sometimes harder to find, because few signs direct drivers to them. Local residents are generally familiar with neighboring large shipyards, but community members do not immediately identify with a particular yard or several yards, as is the case in other Gulf Coast communities. Although large and medium yards are well-established parts of the landscape, smaller shipbuilding yards and fabrication shops are relatively rare. The area's large yards all employ more than 500 people, and two medium-sized yards each employ more than 200 people. The size of the workforce at these yards fluctuates widely, but it remained relatively stable during fieldwork for the study. Specialized fabrication shops exist in the area, but they are geared toward industries other than shipbuilding and fabrication of rigs and platforms.

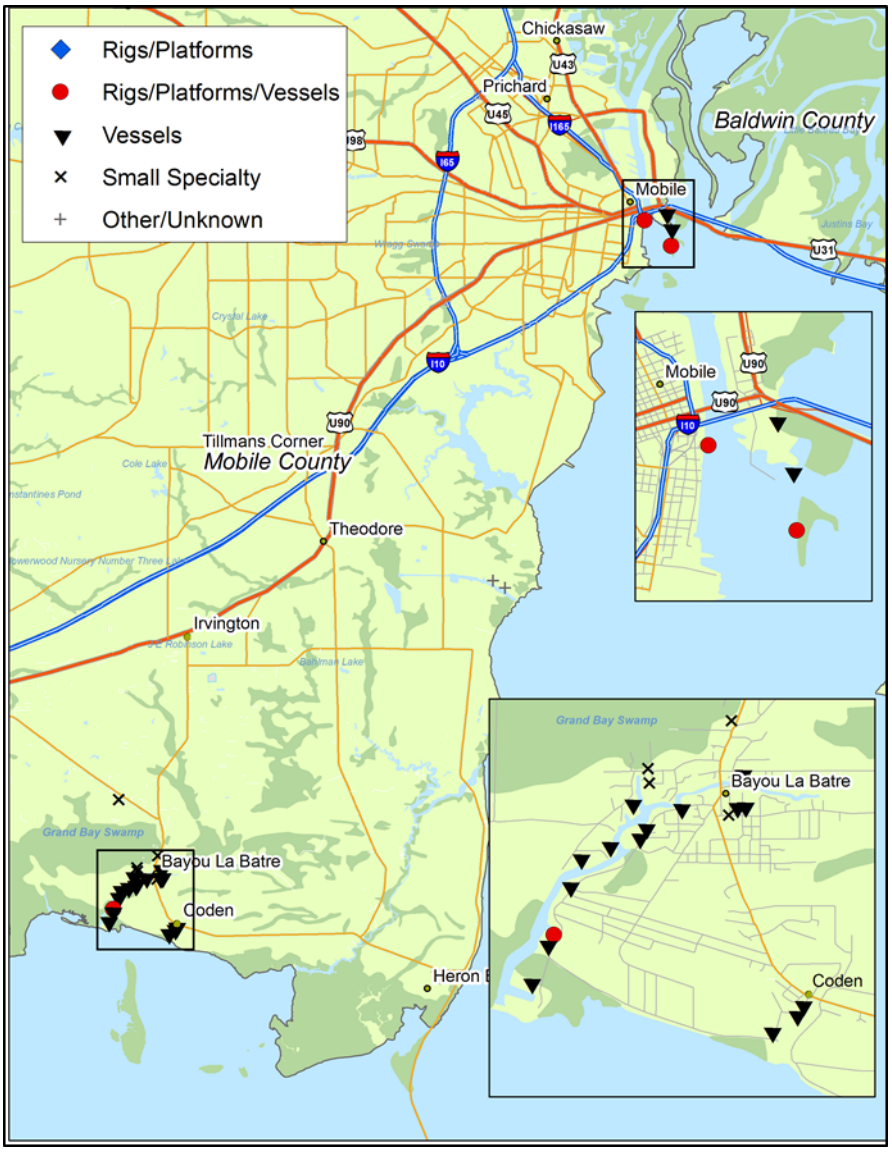

Figure 2.3. Fabrication and shipyards in the South Mobile study area: Mobile and Theodore.

The map was created in 2011 using data packages included with the ArcGIS software suite. Sources used to create these data layers included: ArcWorld/ESRI, National Atlas of the United States, Tele Atlas, U.S. Bureau of Transportation Statistics, U.S. Census, and U.S. Geological Survey. Additional shipyard data assembled by Victoria Phaneuf, 2008-2010, from multiple sources - primarily company websites, business directories, and ethnographic data collection.

In south Mobile County, too, the shipbuilding industry was booming by the mid-2000s (Figure 2.3). Of the 12 yards in Bayou La Batre-Coden, at the time of fieldwork in 2008, every yard reported being booked out as far as was desirable, or at least far enough to be comfortable about contracts for work. Some were booked for three to five years, and others were announcing new contracts. The yards differ greatly; their workers have a wide variety of skills and they source varying amounts of their materials from local suppliers. Yards vary in size from a one-

person or two-person repair operation on a very small piece of land to businesses with over 300 employees and sizable parcels of land spread around town. One yard still specialized in wooden boat repair, while others built offshore service vessels (OSVs), Coast Guard patrol boats, fishing boats of all kinds, tugs, or tourist and other specialty boats. Some yards took advantage of the recent opportunity to expand production as much as possible, acquiring land and hiring more employees, but others consolidated their positions in a specific niche and made the decision not to grow.

As one shipyard owner noted:

> The sun never sets on a Bayou La Batre built boat, we have boats all over the world. Mine are in Africa to Guam and probably other places, too: Washington, Alaska, Hawaii, South America, Africa, Marshall Islands. Some customers have boats in New York and New Jersey and bring them here to be repaired and refurbished. Bayou La Batre is probably the last commercial semi-deep port that you can have anything done to a fishing boat that you want. (VP104 2009)

The large amount of available work during the fieldwork period made competition among the yards minimal. Differences in the type of work, kind of contract, and the business philosophy of the yards were reflected in the length of contracts, from 12 months to more than four years. One yard owner characterized the difference this way: "They're all busier than we are, but they're also younger, they aren't scared to book two years and more. I am. A friend once told me that the hardest thing is to keep what you've got. So I work to keep it and not just make a profit" (VP008a 2007). In discussions of the yards' willingness to contract out for longer or shorter periods of time, one important factor was inclusion of escalation clauses in the contracts to protect both the shipyards and their customers from price changes by suppliers, as when the price of steel doubled within a month in spring 2008.

Locals would often say that individuals like to buy boats in the Bayou La Batre area because it is easy to comparison shop. However, it was more common to hear that the yards do not take away from each other's business, and often have repeat customers. Both the market boom and shipyard diversity contribute to this state of affairs. Although managers and workers of a few yards described informal relations with between or among yards—due, at times, to family or friendship ties—and reported that their yards would forward customers to other yards or cooperate in other ways, formal or contractual relationships were rare.

In addition to the shipyards, the other main industries are the approximately 108 seafood processing plants in Mississippi and Alabama (Mississippi State University 2011) and the nearby natural gas plants—the Shell Yellow Hammer Gas Treating and Processing Plant, the Mobile Bay Processing Plant and Cogeneration Facility, and the Williams natural gas processing plant. The Thyssen-Krupp steel mill under construction in Calvert, Alabama, was expected to draw workers away from the area as well as provide more work, though far fewer jobs were created than expected (Underwood 2009, ThyssenKrupp 2010).

One local shipyard reported having signed contracts to repair boats that will service the plant (VP104 2009). A couple of other proposed projects, including ConocoPhillips' Compass Port LNG facility and Freeport McMoRan's Main Pass Deepwater Port for LNG, never materialized. As reported earlier, ConocoPhillips withdrew its application amid strong opposition for its proposed open loop system by Alabama Governor Bob Riley. The Main Pass facility, designed to receive, condition, and regasify LNG, as well as for underground storage and distribution of

natural gas, was approved by the Maritime Administration (MARAD) on January 3, 2007. However, MARAD did not issue a license for the project because Freeport McMoRan was unable to meet the Deepwater Port Act's financial responsibility requirements (U.S. Department of Transportation Maritime Administration n.d.).

2.2. HISTORY

Shipbuilding has taken place in south Mobile County since at least the 19th century. Initially, individuals built their own boats or were hired short-term to assist others with construction. Boats were built out of wood and could be built by an individual or family, with only occasional help from outside laborers. Some families in the shipbuilding industry trace the craft back generations because their shrimping ancestors also built their own boats and equipment.

2.2.1. Maritime and Shipbuilding History to 1945

At the dawn of the 20th century, Mobile's population increased substantially. Harbor improvements also helped to shape Mobile as an important shipbuilding city and boosted the local economy. The oldest yard still operating in the city opened just before the turn of the 20th century. In 1895, Dave and Edward Harrison started Harrison Brothers Dry Dock & Repair Yard, Inc., on Palmetto Street in Mobile (Harrison III 2008). In 1917, the company purchased another yard and moved to its current Blakely Island location. At first, the shipyard mostly repaired wooden cargo ships, and built and repaired fishing vessels (Harrison III 2008; Historic Mobile 2008 proof).

World War I created new opportunities for Mobile, but also presented new challenges. The war drastically disrupted international trade, especially the cotton trade, which was crucial to the region. Traffic at the port initially declined, though some observers in Mobile expected shipbuilding to boom due to heavy demand by the federal government. However, Mobile shipyards were unable to contribute significantly to the war effort. Although federal money arrived, the yards faced considerable labor shortages and proved largely inadequate for meeting the government's needs (Encyclopedia of Alabama 2009b).

In 1916, Alabama Drydock and Shipbuilding Company (ADDSCO) opened. ADDSCO was the work of D. R. Dunlap, president of Alabama Iron Works, and his cousin, George H. Dunlap, who consolidated several small Gulf Coast companies: Ollinger and Bruce Drydock Company, Alabama Iron Works, Gulf Dry Dock Company, and Gulf City Boiler Works (Mesothelioma 2009). ADDSCO became the biggest shipbuilder in Mobile. The company's first shipyard was established on Pinto Island in Mobile Bay and its workforce was multiracial. Most of the 4,000 employees in 1917 were white, but numerous African Americans held low-level positions, such as helpers for white welders. During World War I, ADDSCO received a few government contracts and among its projects were three minesweepers, two steamers, and two barges (Alabama Dry Dock 1969). After the war, the company continued to repair a variety of vessels on its two drydocks and entered a two-decade period of barge construction. Its customers included the Panama Canal Company; Tennessee Coal, Iron, and Railroad Company; and Warrior and Gulf Navigation Company (Colton n.d.a).

Another yard that opened during World War I was the Chickasaw Shipbuilding and Car Company. U.S. Steel, venturing into shipbuilding, chose the town of Chickasaw just north of Mobile. Tennessee Coal and Iron, a U.S. Steel subsidiary, coordinated the venture by purchasing land to build a shipyard and its supporting infrastructure. Three companies emerged from the

project: the Chickasaw Shipbuilding and Car Company, Chickasaw Utilities Company, and Chickasaw Land Company. The U.S. Navy provided $20 million to develop the yard. Essentially, Chickasaw became a company town, comprising not only residential quarters, but also its own business district, sewer system, and a policeman. The yard, however, did not benefit from the overseas conflict. An armistice ended fighting in Europe before the yard began operations. Even though 14 cargo ships left the yard after the war, it quickly folded after getting too few shipbuilding contracts (Global Security 2009b).

A little-known shipyard, Mobile Shipbuilding Company, built more than a dozen cargo vessels for the U.S. Shipping Board between 1918 and 1920, but the history of this yard is uncertain (Colton n.d.b). Another source briefly mentions that the Mobile Shipyard operated from the Civil War through the 1950s, but whether the two companies are the same is unknown (Flotte's Notes 2009).

Bender Shipbuilding and Repair Company began operations just after World War I ended. Theodore Jackson Bender established Bender Welding and Machine Company in 1918 and soon introduced electric arc welding to Mobile. The shop specialized in metal fabrication, but did not enter the shipbuilding and repair business until after World War II (Bender Shipbuilding 2009).

Although not involved in shipbuilding or repair, the Port of Mobile received a major boost when the Alabama State Docks Commission formed to use state dollars to further develop Alabama's largest seaport. The commission's charge was to develop a variety of facilities for the import and export trade—wharves, piers, docks, grain elevators, cotton compresses, warehouses, and water and rail terminals (Alabama State Port Authority 2009b). The actual Alabama State Docks opened in 1928, but the docks had received their first cargo ship carrying sugar in 1927 (Alabama State Port Authority 2009b). The opening made Mobile an increasingly important international port; it strengthened the city's economic prosperity and turned it into one of the largest ports in the country. The state docks, which initially cost $10 million, could accommodate 18 ships. The facilities included three steel and concrete piers, a coal and bulk-materials handling plant, a terminal railroad connecting five rail lines serving the port, and acres of warehouse space. The docks would facilitate inland trade, thereby improving Mobile's economy and attracting industries from across the country (McLaurin and Thomason 1981).

Mobile's economy also benefited from the 1919 founding of the Waterman Steamship Corporation by John B. Waterman. What started out as a company with one ship, the *Eastern Sun*, would ultimately become one the nation's largest shipping companies. World War I prompted the creation of Waterman, and led the company to push for improvements at the Port of Mobile (Encyclopedia of Alabama 2009b). According to *Press-Register* reporter Cammie Cowan, Waterman "led the fight for more deepwater facilities to expand Mobile's seagoing possibilities . . . and the development of interior waterways coming to Mobile" (Press-Register 2006). In 1926, John Waterman established and became president of the Mobile, Miami, and Gulf Steamship Company, which later became the Waterman Lines. This expanded the company's ventures beyond Mobile to Florida, Puerto Rico, and elsewhere the West Indies. Waterman also operated a repair division to service company vessels (University of South Alabama 2009).

In the early years, before shipbuilding became a significant local industry, the economies of Bayou La Batre and Coden centered on seafood and tourism. Families fished, crabbed, oystered, and shrimped, for their own sustenance and, increasingly, to sell. The completion of the railroad and the appearance of ice manufacturing plants in the late-1800s allowed fishermen to sell their catch beyond their local villages (Seacat 2007: 20). The Bayou La Batre Canning Company

started operations in 1896, processing oysters from Mobile Bay. The company shut down in 1900, then purchased several canneries, and reopened in 1903. In 1904, the company built a second cannery at Alabama Port. Eventually, though, having more processing capacity than oysters, the company shifted and began to favor shrimp (Durrenberger 1992). The Alabama Canning Company built a cannery on Portersville Bay between Bayou La Batre and Coden in 1910; the cannery closed in 1912 but reopened in 1915 after a hurricane destroyed canneries in Biloxi. The cannery's location on Portersville Bay led to the opening of three miles of the bayou to navigation and construction of a drawbridge across the bayou. The canneries employed men, women, and children, both locals and itinerant workers, ranging from Cajun families to Czechoslovakians and, by the 1930s, people brought from the northeast (Durrenberger 1992, Seacat 2007:18). They operated trucks or buses to transport workers to the shrimp and oyster factories. The canneries competed for workers with lumbering and turpentine operations in south Mobile County.

In the late-1800s and early-1900s, the area's communities (particularly Coden) were also developing into vacation spots, with hotels and fishing camps. The New Orleans, Mobile & Texas Railroad connected the area to local cities, namely Mobile, and summer vacationers could exchange city heat for sea breezes. In 1906, the area's tourist industry all but disappeared when the hotels were damaged or destroyed by a hurricane (Galliard et al. 2008). This hurricane changed the face of Coden and the surviving remnants of the tourism industry were eliminated by the hurricanes of 1915, 1916, and 1926 (Seacat 2007).

Another, more enduring aspect of the tourism industry was sport fishing, which brought visitors from surrounding states. Sport fishing grew with the tourism industry in the late 1800s and early 1900s. It, however, survived the hurricanes before tapering off in Coden (Galliard et al. 2008).Today sport fishing exists elsewhere in south Mobile County, but not the Bayou La Batre, Coden region.

The Great Depression dramatically weakened Mobile's manufacturing sector and diminished port activity. Waterman Steamship was one of the few companies that helped to improve the economy during the Depression. Waterman Steamship acquired Mobile Oceanic Line in 1930 and Atlantic Steamship Corporation in 1933, and took over Anchor Lines of Glasgow from 1935 to 1937. In 1940, Waterman expanded its shipbuilding and repair operations with the purchase of the defunct Chickasaw Shipyard. The revived yard was renamed Gulf Shipbuilding (University of South Alabama 2009).[2]

Other shipyards continued to operate. ADDSCO, still Mobile's largest yard, regularly repaired vessels, continued barge construction, and launched a few dredgers and tugs (Colton n.d. a). Its engineering expertise and the need to diversify won the yard a contract to construct the Bankhead Tunnel under the Mobile River in the late-1930s. Company workers built the tunnel in seven sections and completed the underwater assembly in 1941. Built with Works Progress Administration funds, the tunnel provided a depth clearance of 40 feet for the Mobile ship channel (Encyclopedia of Alabama 2009a).

World War II brought additional money and people into the Mobile area and created work opportunities for African Americans and women. Of all Alabama cities and towns, Mobile felt the greatest impact from wartime production. During the peak of the war, the shipyards and nearby Brookley Air Field, which was constructed in 1940, employed almost 60,000 people.

[2] After WWII, Gulf Shipbuilding remained closed until 1979 when it was bought by Halter Marine. Halter closed the operation in 1983.

Contracts for Liberty ships and destroyers poured in. Mobile shipyards produced merchant vessels and warships, and companies like Alcoa processed aluminum for wartime aircraft (Alabama Department of Archives 2009). The Port of Mobile became one of the country's busiest.

During World War II, ADDSCO returned to wartime manufacturing. The yard initially focused on constructing Liberty ships; one of its first government contracts was to build 20 10-ton Liberty ships, but it also launched and repaired numerous tankers. Its first tanker, the *Arickaree*, was the largest vessel ever built along the Gulf Coast. By the end of the war, ADDSCO had built 102 tankers and refitted 2,800 combat vessels (Encyclopedia of Alabama 2009a). During the war, its workforce grew from 1,000 to about 36,000, and it became the largest employer in southern Alabama (Encyclopedia of Alabama 2009a; Mobile Press Register 1988b). In 1942, the company started hiring white women and by the end of the war had 2,500 female employees. By 1943, 6,000 African-American males were employed by ADDSCO, primarily in unskilled positions (Answers 2009). Racial tensions escalated at the yard and a race riot erupted in 1943 (Mobile Press Register 1994).

Waterman Steamship grew to employ 500 workers in South Alabama during World War II and to operate 125 vessels. The government requisitioned much of the company fleet for the merchant marine. Waterman's recent acquisition in Gulf Shipbuilding Chickasaw allowed it to serve the U.S. Navy, the U.S. Maritime Commission, and the British Royal Navy during the war. Gulf Shipbuilding was among 11 builders chosen by the Navy to produce the 2,100-ton Fletcher-class destroyers (Destroyer 2009). Workers flocked to Chickasaw seeking employment. Waterman's wartime employment fluctuated between 10,000 and 15,000. Gulf Shipbuilding had an impressive record during the war, for it launched 37 cargo vessels, 29 minesweepers, and seven destroyers (Global Security 2009b).

Wartime industries allowed Mobile to thrive during World War II, when its yards built an average of one ship a week. Wages and the quality of life also improved. Women and African Americans found employment in local shipyards and there were occasional glimmers of equality in the workplace for a brief period. Women held various jobs at the shipyards, such as welders and mechanics, and also were employed at Brookley Air Field. By 1944, more than 2,000 women worked at ADDSCO (Alabama Seaport 2009). But soon after World War II ended, jobs began drying up. ADDSCO laid off most employees and returned to its primary pre-war repair work and barge construction.

Gulf Shipbuilding quickly reduced its workforce as orders for new construction plummeted. Waterman decided to expand other aspects of its operations. In 1946, construction began on new corporate offices, the 18-story Waterman Building in Mobile (Press-Register 1950). The building went on to become a popular and stunning architectural feature in Mobile, with a 12-foot revolving globe in the middle of the lobby and several wall murals. That same year, Waterman decided to venture into the airline industry, but Waterman Airlines was hardly successful, ultimately failing and terminating in 1948 (Press-Register 2005; Alabama Seaport 2004).

The wars had changed Mobile's status from a local port to a hub of international commerce. In 1947, Mobile ranked among the nation's largest trading-port hubs (Summersell 1949). The decades that followed the two world wars would have ups and downs for the shipyards, with new ones opening and established ones closing. The first steel-hulled ship built in the area was launched in Bayou La Batre in 1944 by Marine Builders, Inc. (Seacat 2007). As fishing was conducted farther from shore, boats became bigger. That, in addition to the switch to metal, made it more difficult to build boats in a backyard.

By the 1930s, alongside the seafood industry, artist colonies gained prominence in Bayou La Batre and Coden, flourishing along the bayous until the 1950s (Galliard et al. 2008). These colonies did not have a major impact on the area, but they contributed to the perception of the region as a seaside destination for people from outside the region.

2.2.2. Shipbuilding and Fabrication in the Post-war and Early Offshore Oil Industry, 1950-1980s

The post-war world presented new challenges and opportunities for Gulf Coast shipyards. By the mid-1950s, shipbuilding had declined across the country. Despite the larger Gulf Coast shipbuilding industry's difficulties, Mobile's own shipyards enjoyed a steady stream of work during the 1950s and 1960s. The Port of Mobile expanded because of increased trade and became an important oil center, poised to take advantage of the expanding offshore oil industry. In January of 1950, S. Fleetwood Carnley, director of Alabama Department of Industrial Relations, argued that Alabama State Docks accommodations were unrivaled in the nation (Mobile Register 1950a). The Tennessee Coal, Iron & Railroad Co. (TCI) also announced in the 1950s that it would build an ore dock in Mobile (Mobile Register 1950c). Iron ore shipments from South America were expected to increase dramatically in the early-1950s (Mobile Register 1950b). Because of this, many city and business leaders proposed that the ship channel and harbor be deepened. The Korean War meant that many mothballed vessels in Mobile shipyards could be taken out and readied for war-related activities.

By 1953, the chemical traffic in the Gulf waterways had increased significantly. Four major chemical plants had come to the Mobile area: Mathieson Chemical, Geigy Chemical, Stauffer Chemical, and Calabama Chemical (Mobile Register 1953). Additional companies meant greater diversity of items handled at the Alabama State Docks, a major element of Mobile's success (Mobile Register 1954a).

Throughout the 1950s and 1960s, ADDSCO relied primarily on repair work while also building a variety of barges—tank, hopper, deck, and freight types (Business Week 1955, Mobile Register 1963c). It did not, however, neglect the increasingly active Gulf of Mexico oil market, and it took on projects for the Navy.

By the early-1950s, Bender Shipbuilding and Repair Co., Inc. formed and began to concentrate on the repair of small vessels and on the construction of barges and tugs (Bender Shipbuilding 2009). Harrison Brothers, a much smaller business, kept a steady pace and in 1958 opened a second shipyard, known as the Upper Yard, about a mile from the original Lower Yard. It mainly built and repaired tugs for inland operations (Pearson 2004). The 1970s ended with Mobile positioned to expand economically. Recent improvements to the Alabama State Dock facilities and increasing opportunities in the Gulf of Mexico awaited Mobile shipyards (Mobile Register 1973; Mobile Press Register 1973).

South Mobile County's entire economy underwent significant changes after World War II. Due to a 1950 increase in the federal minimum wage, local canneries, which had previously paid employees by the piece, argued they could not afford to pay their workers. They also faced stiff competition from recently-built freezing plants that began to process the area's shrimp and oysters. Consequently, by 1965, the last of the canneries shut its doors.

Local fishermen took advantage, first, of large wooden vessels and then steel-hulled boats to move their operations to deep offshore waters. Some began shrimping year-round (Moberg and Thomas 1993). The shrimp fleet's expansion and modernization greatly increased the volume of

local landings, and raised employment in shrimp processing. Increased local production also allowed larger processing plants to expand their operations and remain open throughout the year.

The local shipbuilding industry benefited from federal support for infrastructure development. In 1950, the U.S. Senate Appropriations Subcommittee added three projects in south Mobile County to President Truman's budget for flood control, and for river and harbor projects. Among them was $62,700 to dredge Bayou La Batre (Mobile Register 1950d)

In response to the fishing industry's economic upturn, steel vessels were increasingly in demand and shipyards began a slow shift from wood to metal boats (Larimer 2004). The local shipyards began building other types of vessels as well, including the first steel tugboat, *Sam Mack*, built in Bayou La Batre in 1950 (Mobile Press Register 1950). With the expansion of both fishing and vessel construction, residents began to specialize, usually focusing on either fishing or boat building. However, some continued to do both, operating fishing vessels while founding shipyards and hiring full-time employees to take over the shipbuilding activities. Seafood processing plants also began to purchase yards and build boats.

In the next decade, federal policy played a distinctive role in the development of the area's shipbuilding industry. To encourage domestic vessel construction, 1964 revisions to the United States Fishing Fleet Improvement Act (P.L. 88-498) made it possible, under certain conditions, for commercial fishermen to be reimbursed by the U.S. government for the difference between the cost of building a vessel in U.S. yards instead of in less-expensive foreign shipyards (Fish and Wildlife Service 1964). Subsequently, at the urging of fishing industry lobbyists, Congress and the Executive Branch revised and redirected government assistance programs to reduce remaining difficulties in securing capital for expansion of fishing capacity (Dewar 1983). In 1976, working with the states and the National Marine Fisheries Service, Congress passed the Magnuson Fishery Conservation and Management Act to develop controls on fishing and put a framework in place for the scientific study and management of fisheries.

South Mobile's shipbuilding industry expanded rapidly during the 1960s and 1970s, reaching a peak in the late-1970s and early-1980s. At that time, there were around 34 yards in the Bayou La Batre and Coden area. In addition to producing fishing boats, the local shipbuilding industry also began to construct vessels for the offshore oil and gas industry. The vessel construction boom coincided with the arrival of the Unification Church in 1977. The church purchased approximately one-fourth of the local industries, including four shipyards, a ship repair facility, a seafood processing plant, a fuel supply company, a net shop, and eight fishing vessels (Reid and Starr 1982). By the early-1980s, the church employed around 400 people and earned substantial revenues.

The good times did not last. Despite efforts to rework programs such as the Fisherman's Obligation Fund, originally designed to build a domestic fleet and make it competitive in the world by limiting capitalization and thus preventing overfishing, in the end the growth was not sustainable. Demand for fishing vessels shrunk in the late 1970s, due to a combination of overcapitalization of vessels in the Gulf and the general economic downturn experienced nationally. Following the oil industry downturn of the early-1980s, a number of yards went bankrupt, closed, or downsized and became exclusively repair yards.

2.2.3. Downturn of the 1980s

Bender Shipbuilding and ADDSCO increased construction for the offshore oil industry in the early-1980s. Bender launched a series of offshore supply vessels for various companies through 1983. It also continued to produce numerous fishing vessels, including four 225-foot tuna purse

seiners, the largest ships ever built at the yard. It delivered a 400-foot pontoon drydock to Todd Shipyard and also constructed its own drydock, a 660-foot facility that would become a major repairer of blue-water vessels. Bender was flourishing and the company's future looked bright. But already by the mid-1980s, a depression in the oilfields was in full swing. The country experienced a major oil glut and the national economy slowed considerably. Bender survived by concentrating on repairs and the still-active fishing industry. It continued to construct new fishing vessels and even converted several unused offshore supply vessels into fishing craft (Bender Shipbuilding 2009).

Halter Marine revived shipbuilding in Chickasaw by purchasing the old Gulf Shipbuilding Corporation in 1979 to take advantage of increased demand for workboats serving the Gulf of Mexico oil industry. The yard launched an impressive number of tugs and OSVs during its brief existence. A victim of the oilfield slowdown, it closed in 1983 (Shipbuilding History n.d.d).

ADDSCO entered the 1980s as a reorganized company, with several subsidiaries, including Alabama Maritime Corporation, its new-construction facility. Alabama Maritime completed three semi-submersible rigs for Diamond Drilling and launched several new barges in the early-1980s. But ADDSCO faced increasing difficulties; labor unrest and a series of mishaps jeopardized its future. The drydock was first damaged on July 7, 1988, when a large section of wing wall buckled. Then, on the July 25, a wake from a passing ship did more damage to the area being repaired (Mobile Register 1988a). A decline in shipbuilding orders and steep drydock repair costs doomed the company. In October of 1988, officials announced the closing of ADDSCO (Mobile Press Register 1988b; Mobile Press Register 1988a). In 1989, Atlantic Marine, a Florida shipbuilder, acquired the defunct ADDSCO shipyard on Pinto Island and opened two new yards in Mobile: a repair facility called Atlantic Marine-Mobile and a new construction yard named Alabama Shipyard, Inc. (Global Security 2009a).

Another company to exit Mobile during this period was Waterman Steamship Corporation. In 1989, Waterman, once the world's biggest privately-owned steamship company, closed its last office in Mobile and moved to New Orleans. The Crescent City-based International Shipbuilding Corporation purchased all Waterman stock (Mobile Press Register 1989).

In contrast to its impacts on the larger yards, the downturn of the 1980s did not seriously affect Harrison Brothers. The small company survived because it never significantly entered the offshore oil industry. Its main clients were independent tugboat companies involved in inland waterways (Harrison III 2008).

Shipyard owners and managers described a number of strategies for surviving shipbuilding and fabrication industry's ups and downs. Some yards were able to maintain their focus on fishing by building for international customers. Some companies that had diversified from seafood processing or fishing into shipbuilding closed the shipbuilding segment of their business and continued to operate as they had before the boom. Some yards survived the 1980s and 1990s by coming to own and operate some of the boats they built. Other owners closed their yards and switched careers with the intention of returning to the industry when the market recovered.

South Mobile County underwent some additional changes during the 1970s not faced by the City of Mobile. Bayou La Batre was well poised to take advantage of rapid expansion in the construction of fishing vessels—due to technological changes and federal subsidies. Several new yards opened and, at one point, the shipyards were producing a trawler a day (Pearson 2008). Several shipyards transferred ownership in the 1970s, including, as earlier discussion suggested, a yard purchased by members of Reverend Moon's Unification Church and opened under church management in 1978. The initial community response was swift and negative: protests and

picketing. Over time employees came to realize that their new managers were "fair and efficient," suppliers found that the managers purchased locally, and community-company relations improved (Reid and Starr 1982:20).

In 1979, a crab processor in Bayou La Batre first began bringing in Vietnamese, Laotian, and Cambodian immigrants to provide labor for his plant (Moberg and Thomas 1993). By 1983, several hundred immigrants had moved into Bayou La Batre, most of them to take advantage of employment opportunities in the crab and shrimping industries. Local crab and shrimp processors generally credit the arrival of the Indochinese with saving the local industry from its near demise in the late-1970s.

In 1988, 534 commercial shrimp vessels operated from Bayou La Batre, making shrimp harvesting and processing by far the largest sector of the local seafood industry. That year, nearly 11 million pounds of shrimp, with an estimated value of $40 million, were landed by Bayou La Batre shrimpers alone. Over four times the amount was imported from other states and countries for processing. Local firms also processed approximately $14 million worth of crab meat. This level of processing activity requires a great deal of labor. In 1987, 1,153 people were employed in the 17 local shrimp processing plants, a figure which exceeded the adult population of Bayou La Batre at the time (Thomas and Formichella 1987). More than 700 workers were employed in 23 crab processing houses, and hundreds more workers found employment in the local fishing fleets, ship-building firms, and the service sectors that support each of these industries. To satisfy this demand for labor, the seafood industry in Bayou La Batre drew heavily on the residents of surrounding communities, including Mobile (Moberg and Thomas 1993), as situation that changed little during the next decade.

2.2.4. Deepwater Gulf of Mexico, 1990s to 2008

The resurgence of Gulf oilfield activity in the 1990s was certainly welcomed in Mobile. Since the 1990s, a shipbuilding renaissance has occurred in Mobile as an increasing number of large shipyards launched a variety of maritime vessels.

Atlantic Marine's repair yard and new-build site, Alabama Shipyard, has been consistently busy. Building and repairing barges remained a primary activity, but the company made several attempts to diversify its customer base. During the 1990s, Alabama Shipyard completed two multi-vessel Navy contracts. It built five fuel-and-oil storage barges, five aircraft transportation lighters, and 10 crane barges by the middle of the decade. It launched two casino boats, taking advantage of the growing demand for such vessels. Alabama Shipyard has only occasionally taken an interest in crafting workboats for the Gulf of Mexico oil industry; in 2002, it completed two offshore supply vessels for Hornbeck Marine. Subsequently, the company attempted to move further into commercial work, although problems arose due to cancelled contracts. In 2006, JFL Partners, LLC, bought both yards to create Atlantic Marine Alabama (Shipbuilding History n.d.d).

Australian shipbuilder Austal entered the Mobile market in 1999 through a joint venture with Tom Bender of Bender Shipbuilding. In 2008, Austal USA, an entirely new yard on Pinto Island and the company's only American yard, was Mobile's largest shipyard. After opening, the company embarked on a major campaign to build a variety of vessels. It launched offshore supply vessels for Otto Candies, cruise boats for the travel industry, huge ferries for Hawaii and two Littoral Combat Ships and high-speed vehicle-passenger catamarans for the Navy (Colton n.d.c). In November 2008, Austal USA announced that it had won a U.S. Navy contract to build 10 high-speed transport ships (Austal 2008). Winning this contract led Austal officials to

announce plans to nearly double the company's workforce by hiring an additional 1,000 workers over the next five years. A $254 million expansion includes a new manufacturing facility, warehouse, administration building, and training center (Blomquist 2008).

Bender Shipbuilding emerged from the 1990s constructing fishing vessels and expanding into new markets. In 2006 Austal bought out Bender. More recently in Mobile, C&G Boatworks began to meet the needs of the expanding oil industry. Originally a Bayou La Batre-based firm established in 1996 with a single employee, C&G in 2009 employed more than 300 workers in its Mobile and Bayou La Batre facilities. In just over a decade, the company became the largest aluminum boat builder on the Gulf Coast. It has also built steel vessels and bunkering tankers (Workboat Show 2009).

Harrison Brothers Drydock and Repair Yard, has also successfully weathered the shipbuilding industry's ups and downs (Pearson 2004). In 2009, Harrison Brothers employed 20 full-time workers, but had a large pool of contract labor. The company operated two small yards, each with a drydock equipped with derrick cranes and compressors for doing all forms of vessel repairs. Since the 1990s, about 95% of its business was repairing inland-waterway vessels, instead of building new ones. Yet, the Harrison Brothers shipyard, too, has since diversified to work with the offshore petroleum industry (Harrison III 2008). Throughout the history of shipbuilding and fabrication in the area, various shipbuilders have gotten a start, expanded, and succumbed to pressures of one sort or another, but the industry remains a significant feature of the Mobile community. South of the city, in Theodore, Superb Marine and Industrial Services, Walashek Industrial and Marine, and Silver Ships were operating at the time of this study. In south Mobile County, Steiner Shipyard is known for building for Disney's *Pirates of the Caribbean*. Other shipbuilders in the region include Horizon Shipbuilding, Inc, Rodriguez Boat Builders, Master Boat Builders, and Master Marine, Inc. All experienced tremendous losses as a result of Hurricane Katrina but, by 2008, they had rebuilt, focusing primarily on the construction of tugs and towboats (Pearson 2008).

2.3. Fabrication and Shipbuilding in the Context of Other Occupations and Industries

In recent years, the City of Mobile's economy has diversified considerably, with the speedy expansion of the service sector. Mobile is the only study community where the service sector took the leading position in the local economy. However, as indicated above, the city has a strong industrial base that includes paper products, shipbuilding, aviation, chemicals, lumber products, textiles, seafood processing, and oil and gas production. This diversity is particularly apparent in the City of Mobile. It is noteworthy that many of the Mobile area's heavy industries, as well as the tourist, recreation, and commercial fishing industries, capitalize on the area's coastal resources. The oil and gas and aerospace industries, which entered the local economy relatively recently, have come to account for substantial portions of local business. At the time of the study the new ThyssenKrupp steel and stainless steel processing facility was expected to provide additional competition for the area shipyards. The facility was expected to offer substantially higher wages than the local yards and present a cleaner work environment, a combination that many observers predicted would draw experienced craftsmen from the area (PP016 2008; PP056 2008; PP058 2008; PP059 2008). As discussed above, the expected competition for workers was not forthcoming. In conjunction with Mobile County's general prosperity over the past two decades, the shipbuilding and fabrication industry has had substantial increases in the number of workers and employee wage levels since the 1990s. Study

participants reported that the area shipbuilders filled separate niches and, thus, did not compete much, if at all, for business. However, shipbuilders and fabricators do generally compete for the same resources, especially labor. It remains to be seen whether in coming years wages at the shipyards will be sufficient to prevent a loss of labor to the area's other growing industries.

Following a period of heavy shrimping vessel construction in the mid-late 1990s, overcapitalization, rising number of import shrimp, and falling shrimp prices led to some shrimpers leaving the industry in the early 2000s. Although the number of shrimpers in the area is reduced from the 1980s and 1990s, a number of inshore and offshore boats continue to operate out of Bayou La Batre and Coden. Total commercial landings at Bayou La Batre and value of the product are shown in Table 2.1. Furthermore, oystermen, crabbers, and fin-fishermen still ply their trade in the waters of the nearby bays. Seafood processing continues to be very important to the local area and employs many people, especially more recent migrants. Bayou La Batre continues to hold a position as one of the major processing centers along the coast. However, the lack of demand for new shrimping vessels following the early 2000s has led to most local shipyards converting to building tugboats and towboats, although some continued to find markets for shrimp boats. In 2007, Russell Steiner of Steiner Shipyard in Bayou La Batre, for example, bought six used shrimp boats at a federal auction, fixed up two of them, and sold them to fishermen from the Republic of Croatia, where they were to be used in the Mediterranean tuna sea-farming fishery (Chowning 2007).

Table 2.1.

Commercial Fishery Landings and Value at Bayou La Batre

Year	Quantity (million pounds)*	Value (million dollars)
2010	3.1**	4.7
2009	21.0	30.0
2008	19.0	36.0
2007	23.0	39.0
2006	28.0	41.0
2005	17.3	28.4
2004	19.1	28.4
2003	18.5	30.8
2002	17.1	27.4
2001	18.0	38.9***
2000	23.0	48.9
1999	17.8	40.0
1998	23.6	36.4

*Note that value varies by species, so there is no direct correlation between quantity and value.
**The dramatic drop in landings is assumed to be related to the explosion of the Deepwater Horizon drilling rig on April 20, 2010 and subsequent release of oil into the Gulf, which led to fishery closures throughout 2010.
***Bayou La Batre was in the top ten U.S. ports in value in this year.
Source: National Marine Fisheries Service (NMFS) n.d.

Even before the 2005 hurricanes, debates about land use were common in the study area. A proposal to develop areas of Bayou La Batre into a vacation site, with waterfront condominiums,

marinas, and an emphasis on sport fishing and pleasure boating had been put forward by Tim James, son of former Governor Fob James, and was under consideration by city officials. Recognizing a need for alternatives to the fishing industry and also recognizing the amount of revenue which tourism had brought into other nearby areas, some residents supported the new housing/recreation development. Others feared their community would lose its character as a fishing community and start to resemble the coastal communities of Baldwin County. Following the hurricane, plans for tourism development were indefinitely shelved.

Also, a significant increase in the cost of city business licenses and other related fees was of concern to some businesses. South Mobile County's incorporated municipalities charge state, county, and local taxes, but unincorporated areas charge only state and county taxes. Tables 2.2, 2.3, and 2.4 compare the three tax rates—ad valorem (local property), general sales and use, and machinery—of Bayou La Batre, Dauphin Island, Mobile, and the unincorporated areas.

Table 2.2

Ad Valorem Tax Rates (per $1,000 of assessed value)

Municipality	State Mills	+	County Mills	+	School Mills	+	Local Mills	=	Total Mills
Bayou La Batre	6.5	+	20.5	+	21.5	+	5.0	=	53.5
Dauphin Island	6.5	+	20.5	+	21.5	+	5.0	=	53.5
Mobile	6.5	+	20.5	+	29.5	+	7.0	=	63.5
Unincorporated	6.5	+	20.5	+	21.5	+	0.0	=	48.5

Source: Mobile Area Chamber of Commerce 2009

Table 2.3

General Sales & Use Tax Rates

Municipality	State Tax %	+	County Tax %	+	Local Tax %	=	Total Tax %
Bayou La Batre	4.00	+	1.50	+	3.50	=	9.00
Dauphin Island	4.00	+	1.50	+	2.00	=	7.50
Mobile	4.00	+	1.00	+	4.00	=	9.00
Unincorporated	4.00	+	1.50	+	0.00	=	5.50

Source: Mobile Area Chamber of Commerce 2009

Table 2.4

Machinery Sales & Use Tax Rates

Municipality	State Tax %	+	County Tax %	+	Local Tax %	=	Total Tax %
Bayou La Batre	1.50	+	1.50	+	1.00	=	4.00
Dauphin Island	1.50	+	1.50	+	3.00	=	6.00
Mobile	1.50	+	1.00	+	2.00	=	4.50
Unincorporated	1.50	+	1.50	+	0.00	=	3.00

Source: Mobile Area Chamber of Commerce 2009

2.4. INFLUENCE OF THE INDUSTRY ON THE PHYSICAL FEATURES OF THE REGION

The shipbuilders and fabricators of south Mobile County have influenced, and been influenced by, the region's physical layout and infrastructure. Industrial activity is concentrated along the water bodies, the ports, and shipping channels in the north, and the bays and bayou in the south. Figure 2.4 characterizes land use types found and distributed in the region according to the land use classifications from the National Land Cover Database (NLCD, completed in 2001). The figure clearly shows the concentration of industrial and heavy commercial land use across south Mobile County.

The rural character of south Mobile County is one of its distinctive features. Major civic, cultural, and retail establishments are absent; residents who seek those services or amenities travel to Mobile or, perhaps, to Pascagoula. Medical facilities, too, are limited. Because Bayou La Batre is the area's only incorporated city, it is the only place with zoning laws. As in other rural areas, some residents go to surrounding communities to avoid such laws, along with other local regulations and ordinances. For example, the city requires developers to plant trees as a condition of new development, something not required in unincorporated areas. Bayou La Batre can incorporate territory beyond its borders, causing some concern among surrounding land owners. At the same time, especially in the wake of Hurricane Katrina, residents and business owners in the unincorporated areas have experienced the disadvantages of not having the administrative structures in place to support planning or development efforts and to receive funding for them. Population increases occurred in Grand Bay and Irvington after the 2005 storms. Both serve primarily as bedroom communities for nearby metropolitan and industrial areas, and many of their residents are involved in the shipbuilding and fabrication industry. They commute to Northrop Grumman and other medium or large shipyards in Pascagoula, to Mobile, or to the small yards in Bayou La Batre and Coden.

2.4.1. Waterways, Roadways, and Airports

South Mobile County has access to nearby airports, highways, and train routes. The Mobile Regional Airport is 14 miles from downtown Mobile. Another, exclusively commercial airport, is at the Brookley Complex, a five- to 10-minute drive from downtown Mobile, and favorably located for various business interests. Two major interstate highways, I-10 and I-65, traverse south Mobile County. Both highways tend to have very busy morning and evening rush hours, with commuter traffic flowing from various parts of Mississippi and Alabama. Numerous local

and state highways also access the city. Highways 10, 65, and 165 converge in downtown Mobile very close to the Bankhead Tunnel, which, in turn, provides access to many of the major shipyards in the area.

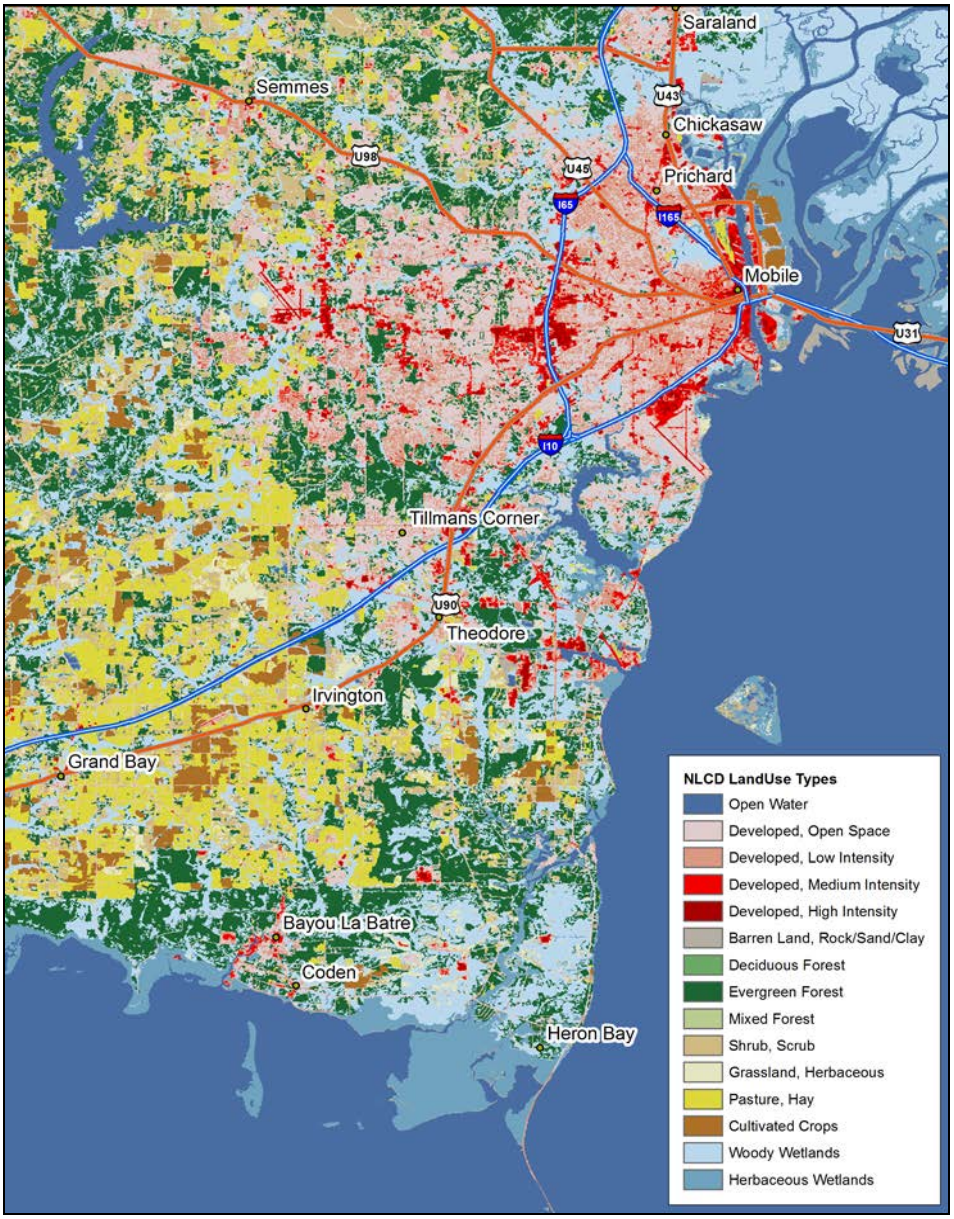

Figure 2.4. Land Use Classifications from the 2001 National Land Cover Dataset: Mobile and Theodore.

Source: Multi-Resolution Land Characteristics Consortium 2001

The main roads into south Mobile County are I-10 and state highway 90. Grand Bay spans both roads, while Bayou La Batre is about a 12 mile drive and Coden is about a 14 mile drive south of I-10. However, primary access to these two towns is on State Route 188, a smaller road with lower speed limits. Very few of the roads have sidewalks, and many are narrow and winding, including parts of 188. Travel on foot or by bicycle is difficult and dangerous, and, given the absence of public transportation, residents generally accept that working in the area requires an automobile.

The State of Alabama does not fund public transportation, which poses problems for the unemployed and for employed people without personal vehicles. Around 20 bus routes are operated by the Mobile Transit Authority, and an electric trolley that connects downtown Mobile with a few city neighborhoods is free of charge. The local bus system does not reach the outer edges of the city, especially in the northwest (The Wave Transit System 2009a and 2009b). Thus, the majority of shipyard laborers, reported to live at the outskirts of the city in the northern, southern, and western parts of the town, would be unable to use the public transportation system. Although there are plans to link the public transportation systems in Mobile County and Baldwin County, high housing prices in Baldwin would be cost-prohibitive for most workers.

The only significant bridge over Bayou La Batre is the drawbridge located in the middle of downtown on Route 188 that can be raised to allow boats to pass underneath. Local residents complain about aggressive drivers, especially around shift changes at the shipyards, when there is regular traffic congestion, a situation compounded by the drawbridge. Turning onto or off of 188, the business district's primary thoroughfare can be difficult and may discourage shipyard workers from out of town from stopping on the way to or from work. Though railroad service had begun in the late-1800s to bring tourists to the Bayou La Batre/Coden area, it was always inconsistent due to hurricane damage and is no longer provided.

2.4.2. Housing, Commuting, and Traffic

During the fieldwork for this study, housing development in the Mobile area was slow but was starting to pick up. Before Hurricane Katrina, developers focused on building high-priced condominiums. Although housing developers were reported by community leaders to be starting to get serious about creating affordable housing developments when fieldwork was conducted, much of the development continued to be for the upscale housing market. Median sale prices for homes in Mobile County rose fairly steadily from about $81,000 in 2000 to $117,000 in 2005. Rates of home ownership for the Mobile area and southern Mobile County are shown in Figures 2.5a and 2.5b.

Apartment occupancy at that time stood at 95%. Study participants noted the need for more mid-priced homes and apartments, and argued that efforts then under way to develop more affordable housing had not been enough to "make a crack in the wall." However, some training instructors and yard or shop managers noted that housing shortage was not a major problem for the area, especially compared with other Gulf Coast communities (PP016 2008; PP056 2008).

From 1970-2007, the gross median rent in the Mobile MSA increased 47% in the city of Mobile and 48.9% in the suburbs (see Appendix E). Like the gross median rent, the median home value for the Mobile MSA has increased (see Appendix E). The highest concentration of low home values is found in Bayou La Batre, where 72% of the homes fall in the lowest national 20^{th} national percentile. Rent and home values in Baldwin County diverge tremendously from values in Mobile County (see Appendix E). In 1970, 60,947 units (66.4%) in the Mobile MSA

were owner-occupied, while 30,822 units (33.6%) were renter-occupied (see Appendix E). A higher proportion of units were unoccupied in the Mobile MSA (see Appendix E).

From 1970 to 2000, the gross median rent increased only 4.3% in Bayou La Batre. The median home value there increased 45.3% from 1970 to 2000. In 1970, 74.2% of the housing units in Bayou La Batre were owner-occupied. For Grand Bay, the gross median rent increased only 4.8% from 1980 to 2000. Meanwhile, Grand Bay's real median home value decreased 8.5%, from $94,806 in 1980 to $86,762. In 1970, 81.5% of the housing units in Grand Bay were owner-occupied (see Appendix E).

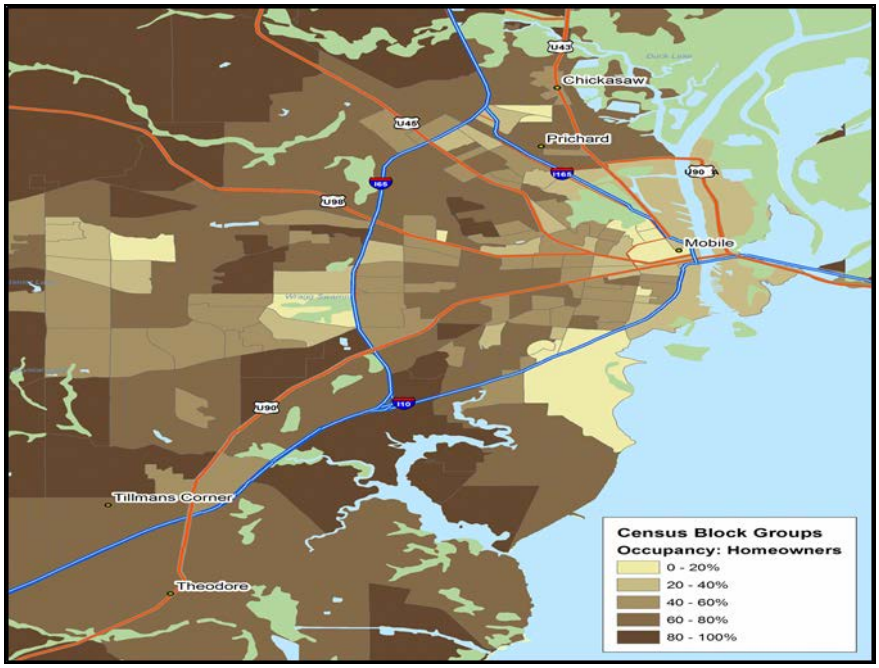

Figure 2.5.a. Housing occupancy: Homeowners in Mobile.

Source: U.S. Census Bureau 2000 Summary File 1; U.S. Census Bureau 2010 Summary File 1.

Figure 2.5.b. Housing occupancy: Homeowners in south Mobile County.

Source: U.S. Census Bureau 2000 Summary File 1; U.S. Census Bureau 2010 Summary File 1.

The number of Mobile residents commuting to other counties increased 75.5%, from 6,856 in 1970 to 12,034 in 2000 (Table 2.5). Thus, 7.5% of Mobile County's workforce left the county on workdays. The number of Baldwin residents commuting to other counties increased 158%, from 6,298 in 1970 to 16,222 in 2000; hence 26.4% of Baldwin County's workforce left the county (see Appendix E). The primary economic sector luring workers away from south Mobile County is manufacturing, followed by services, construction, and retail trade. The largest sector attracting commuters is services, followed by manufacturing, retail trade, construction, and state and local government employment (see Appendix E).

Table 2.5

Work Commuting Patterns by Decade for Baldwin and Mobile Counties

County		1970	1980	1990	2000
Baldwin	Staying	12,863	19,826	29,193	45,210
	Entering	780	1,610	3,096	6,529
	Leaving	6,298	8,659	13,339	16,222
Mobile	Staying	91,886	131,179	141,716	149,150
	Entering	6,072	11,519	14,337	20,122
	Leaving	6,856	9,447	11,424	12,034

Source: U.S. Census Bureau, Journey to Work and Place of Work Data

2.4.3. Recent Developments at the Port of Mobile

The Port of Mobile has expanded considerably in recent years. Construction on a new Intermodal Container Transfer Facility began in 2009. In April 2010, the Alabama State Port Authority director signed a Memorandum of Understanding with the Panama Canal Authority administrator, in conjunction with the expansion of the Panama Canal, as part of a larger strategy to promote an "all-water route" from Asia to the Gulf and East Coasts through the Panama Canal (Panama Canal Authority 2010). In August, the Mobile Harbor Turning Basin was opened, extending the capacity of the Mobile Ship Channel and making it easier for ships exceeding 850 in length to get in and out of the Port terminals (Alabama State Port Authority 2010).

2.4.4. Economic and Industrial Development

A wide range of organizations promote industrial development in the region, including the Mobile Chamber of Commerce, the Economic Partnership of Alabama, the Economic Development Association of Alabama, the Baldwin County Economic Development Alliance, the Mobile Airport Authority, the Mobile Port Authority, Mobile Bay Economic Development, the Minority Business Development Agency, and the Clinton Johnson Center for Economic Development. To attract and retain industries, the City of Mobile has enacted legislation exempting from local sales taxes specified ships, railroad cars, aircraft; materials, equipment, and machinery that become component parts of those items; and materials and supplies used to repair or modify those items.

In general, the 1990s and the new millennium have been years of strong economic growth for Mobile. This holds for the service and retail sectors, and for much of the region's industrial sector, including shipbuilding and fabrication. Since the 1980s and the opening of the Brookley Complex, the aerospace industry has grown substantially. Other industries have also emerged or grown, and, in coming years, these will further diversify and complicate Mobile's economic and social landscapes. In this economic context, the shipbuilding and fabrication industry holds an important but not central position. Despite Mobile's industrial history, services and tourism have been the fastest-growing economic sectors in recent years, a development, some study participants believe, that may come into conflict with heavy industry. The ongoing debate between industrial expansion and "quality of life" issues is evident in local disagreements about building LNG terminals in Mobile Bay and construction of a bridge over I-10. Efforts of local political, business, and community leaders to project and transform Mobile into a globalized, cosmopolitan center, for example, through remodeling the downtown area, also raise difficult issues for residents and their relationships with local industries.

Economic and industrial development was at one time coordinated by the City of Bayou La Batre Industrial Development Board, but it had become inactive when fieldwork was conducted. In August 2006, three board members of the original Industrial Development Board applied for reincorporation as the Bayou La Batre Industrial Development Authority to serve the City of Bayou La Batre and the unincorporated areas within a 25-mile radius of the city. The IDA does not have a website or otherwise advertise its activities, and no information about those activities was available during fieldwork.

2.5. INFLUENCE OF THE INDUSTRY ON THE POPULATION OF THE REGION

The influence of the shipbuilding and fabrication industry on the population of south Mobile County is less immediately obvious than that on the physical features of the region, but that influence can be discerned from both qualitative and quantitative data. Population growth and decline, and the emergence and maintenance of workforce development and training programs are, at least in part, affected by this industry's labor demands. The port and the large shipyards are located in downtown Mobile. The following sections summarize trends in employment and wages within the region.

2.5.1. General Population Dynamics

From 1970-2007, Mobile County's population increased 27.4%, but the population of the City of Mobile has not (Figures 2.6, 2.7a, 2.7b). From 1970 to 2007, Baldwin County's population increased 189%, whereas Bayou La Batre's population increased 7.3%, from 2,664 people in 1970 to an estimated 2,859 people in 2008 (see Appendix E). Net domestic migration numbers indicate that more people are leaving Mobile County than entering (see Appendix E). The birth rate declined 14.6% in Mobile County and 12.4% in Baldwin County from 1981-2007 (see Appendix E, for additional details).

In 1970, 87.3% of all families in Mobile County were headed by married couples, a proportion that decreased to 59.5% in 2000. Married couples head 90.3% of all Baldwin County families in 1970, but the proportion had fallen to 71.5% in 2007. In Grand Bay, the proportion of married household heads decreased from 87.2% to 81.3% (see Appendix E).

Although Mobile County is touted for its ethnic diversity (see Appendix E), the population was quite segregated prior to Hurricane Katrina. The African American population was primarily located in Coden and on Freeland Road in Grand Bay. There is also a section of downtown Bayou La Batre south of Route 188 and east of the bayou, which study participants referred to as "Little Saigon" because of its high population of Asian Americans. The Little Saigon neighborhood was badly damaged by Katrina and its future was uncertain at the time of fieldwork for this study.

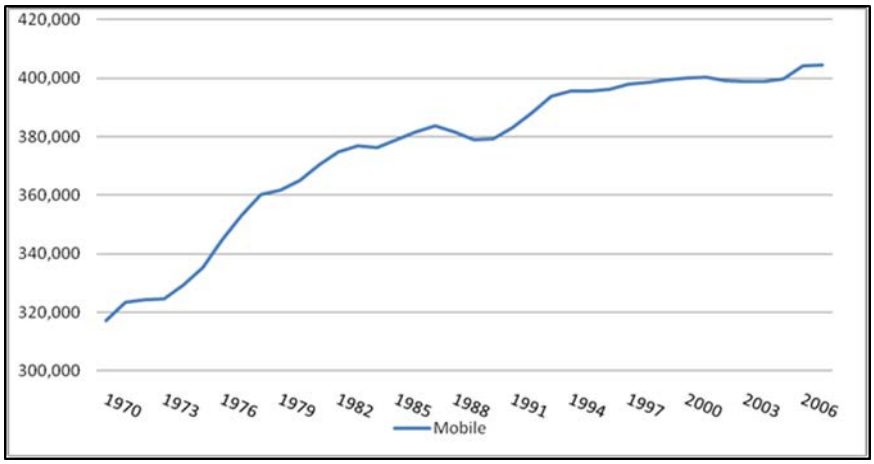

Figure 2.6. Population of Mobile County Source: U.S. Census Bureau, Population Estimates, Incorporated Places and Minor Civil Divisions.

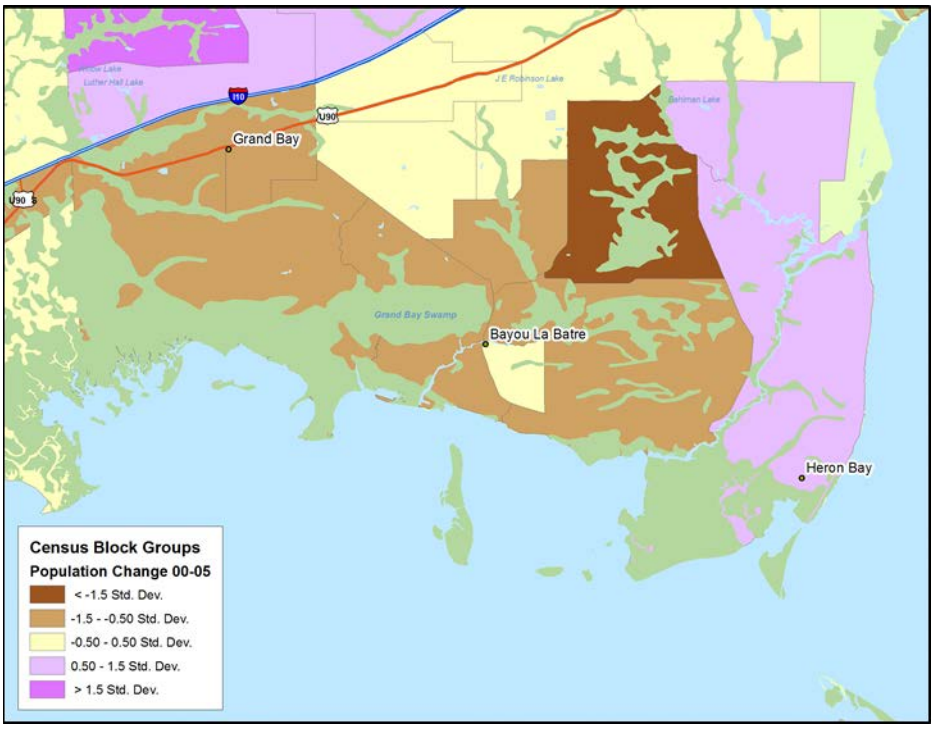

Figure 2.7.a. Percent population change in south Mobile County-Census 2000 to Census 2005.

Source: U.S. Bureau 2000 Summary File 1; U.S. Census Bureau 2010 Summary File 1.

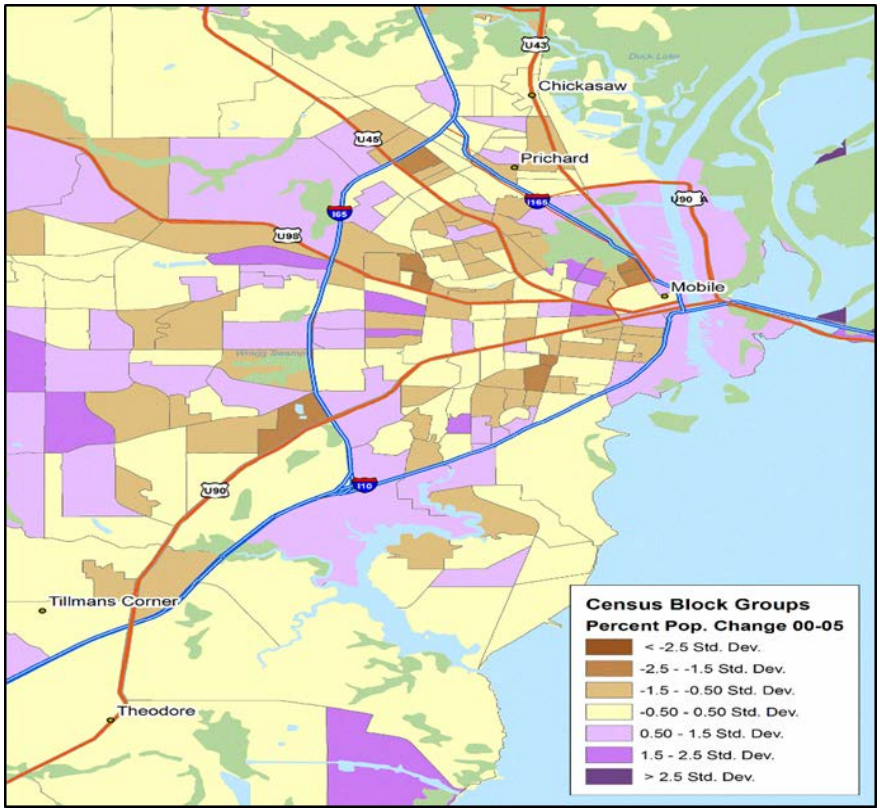

Figure 2.7.b. Percent population change in south Mobile County- Census 2000 to Census 2005.

Source: U.S. Bureau 2000 Summary File 1; U.S. Census Bureau 2010 Summary File 1.

Some shipyard owners live in Bayou La Batre, but the majority of the wealthier business owners live outside of town. Some local residents have expressed concern that the proposed (and now built) housing development, though designed to include affordable housing, will further shift social, political, and community investment away from downtown Bayou La Batre to bedroom communities on the periphery. As discussed below, Bayou La Batre and Coden are primarily inhabited by lower- and middle-income families.

The median income in Mobile County lags behind the median income for the State of Alabama and the United States (see Appendix E). In the City of Mobile, real median incomes are decreasing and more people are falling into the lowest 20th national income percentile. As of 2007, 20.8% of Mobile County lived below the poverty line (see Appendix E). Baldwin County's median income was $9,000 higher in 2007 than the state's median income and $12,000 higher than Mobile County's. As of 2007, in Baldwin County, the proportion of people below the poverty line was estimated to be 10.3%, well below state and national averages.

During 1969-1999, the real median family income of Bayou La Batre decreased. In Grand Bay, the median family income in 1969 was $53,764, well above state and national averages. The proportion of people living below the poverty line in Bayou La Batre increased from 1969 to 1993, peaking at 42.5% in 1993. The proportion of people living below the poverty line in Grand Bay has been among the lowest in the Mobile MSA (see Appendix E).

2.5.2. Workforce Development and Trends

Population and economic statistics illustrate that 1990-2007 was a period of growth for south Mobile County. While the manufacturing sector continued to decline, the fabricated metals portion of this sector, and shipbuilding and fabrication in particular, grew. Yet, as the statistical data show, the service and retail sectors have assumed increasing importance for communities in south Mobile County since the mid-1970s. The prominence of these industries is one important way that south Mobile County differs from other study areas in this report. The following sections summarize trends in employment and wages within the region.

In Mobile County, the working-age male population has grown from 69,495 in 1970 to 104,176 in 2007. The two fastest-growing groups in Mobile County were men 50 to 59 years of age and men over age 60. In Baldwin County, the working-age male population increased 251.7%, from 12,650 in 1970 to 44,492 in 2007. From 2000 to 2007, the fastest-growing component of the male population was men between the ages of 20 and 29 (see Appendix E). The number of people employed in Mobile County increased 12%, from 159,601 people in 1990 to 178,109 in 2007. The number of people employed in Baldwin County increased 78%, from 44,492 people in 1990 to 80,824 in 2007 (see Appendix E). The number of unemployed people has fluctuated between 1990 and 2006 (Figures 2.8a and 2.8b).

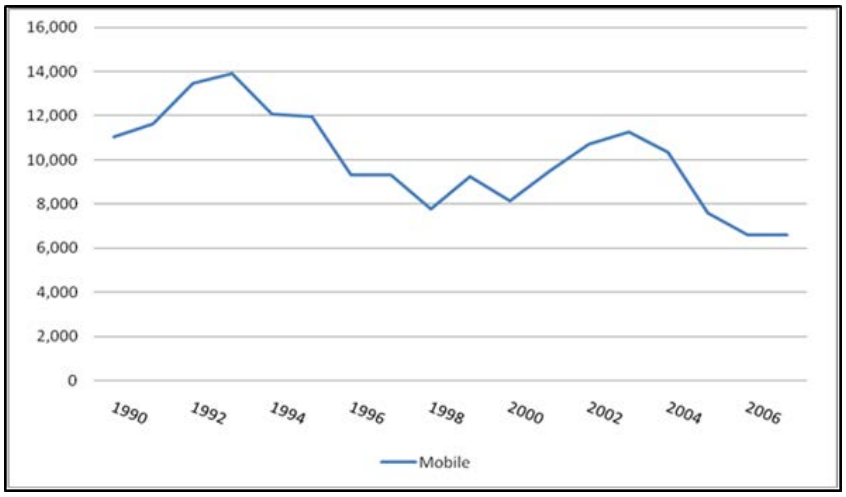

Figure 2.8.a. Total number unemployed in Mobile County.

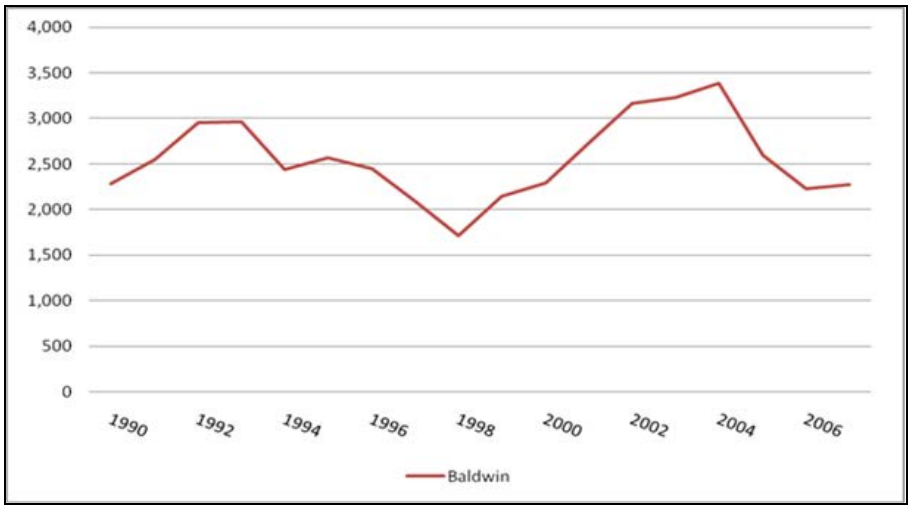

Figure 2.8.b. Total number unemployed in Baldwin County.

Source: U.S. Department of Labor, Bureau of Labor Statistics, Local Area Unemployment Statistics.

2.5.2.1. The Shipbuilding and Fabrication Workforce

During 1970-2006, employment in the Mobile MSA the shipbuilding and fabrication industry almost doubled. This increase was even more significant given that the number of firms grew and then contracted due to some consolidation in the industry. The demand for this industry in the Mobile MSA was further demonstrated by the significant wage growth both in nominal[3] and real terms. In fact, real wages increased 27.7% over the period compared to only 18.8% for manufacturing in total.

What makes the general trends in the shipbuilding and fabrication industry for the Mobile MSA so impressive as a contributor to the region's economic profile is the general decline of manufacturing within the MSA based on total employment. During 1970 to 2006, manufacturing employment declined approximately 29%. Furthermore, while nominal and real wages in the manufacturing sector have generally increased over 35 years, they have not kept pace with the growth in wages in the shipbuilding and fabrication sector of manufacturing.

Like many of the other study communities, Mobile County has had a substantial shift in its economic profile since 1970, from a manufacturing-dominated economic profile based on employment in absolute terms and as a percentage of total employment and income, to a profile dominated by the service sector in terms of total employment and total income.

The data series for the period of 1990-2007 in the Mobile MSA shows shipbuilding and fabrication employment increasing from 1,771 to 3,274 workers employed on average each year, peaking in 2007 (see Appendix E). The annual average wages paid in the shipbuilding and fabrication industry also increased during this period (see Appendix E). In real terms, the increase in annual average wages was 27.66%, from $6,329.67 in 1990 to $8,080 in 2007. In 1990, the average wage for shipbuilding and fabrication was nearly equal to the median income

[3] Nominal wages are calculated in current dollars unadjusted for inflation, whereas real wages are measured in constant dollars adjusted for the effects of inflation. Inflation is typically defined as a rise in the general price level of a typical market basket of goods and services.

for Mobile County, whereas, in 2007, the average wage for shipbuilding was approximately $8,000 higher than the county's median income.

Similar to most other study communities, many industries in Mobile faced labor shortages during 2007-2009, resulting from a number of factors. While the 2005 hurricanes affected labor availability in other communities along the Gulf, study participants in south Mobile did not mention them. Factors thought to have had significant impacts on the labor force were the establishment and opening of new industries, and the growing popularity of university education among residents. New industry and businesses could be beneficial, according to some study participants, but they also forced existing industries, including shipbuilding and fabrication, to compete for a shrinking labor pool. Participants from the industry commonly attributed the decline in available labor, especially among people from younger generations, to uncritical promotion of four-year university education by local educators. Industry managers and workers viewed developing and publicizing effective training programs for skilled labor as crucial to the continued success of the area's shipbuilding and fabrication yards. Responding to the concerns of local businesses, the Center for Workforce Development (CWD) opened in 2004. The CWD promotes and supports workforce development partnerships among area business, education, and community leaders. Multiple industry workforce coalitions affiliated with the CWD aim to meet current as well as future business and industry workforce needs. Mobile Works, a partnership between private and public groups, had been established in 2000 to offer on-the-job training programs and incumbent worker training programs.

According to industry managers, supervisors, and workers, shipbuilding and fabrication has faced and continues to face unique labor and training challenges. For them, the cyclical character of shipbuilding and fabrication, the industry's wages relative to those paid by other local industries, and its working conditions were the main factors impacting labor acquisition and recruitment. These people commonly noted that south Mobile County residents perceive working conditions on the yards as dirtier and more dangerous than conditions at other places of employment. Some shipbuilding/fabrication managers, supervisors, and workers spoke about the need to change prevailing views of their industry, especially the perception that the yards show little concern for forging long-term commitments and relationships with their workers. Shipyard management sometimes argued that local perceptions of shipyard work as unstable had led many potential workers to seek employment with labor contractors in an effort to maximize earnings. By the end of the fieldwork period, the three large local yards, Atlantic Marine, Austal, and Bender, had begun to address these concerns by placing greater emphasis on in-house and community training programs as well as the cultivation of career paths.

Larger-scale efforts to labor issues have proceeded along similar lines as the yard-specific efforts of particular south Mobile County companies. The Gulf States Shipbuilder's Consortium, of which a number of local yards are members, seeks to curtail frequent lay-offs associated with the industry's cyclical activities by setting up business partnerships that would facilitate the movement of labor from one worksite to another (Gulf States Shipbuilder's Consortium 2011). Partnerships would not only improve the relationship between workers and shipyards, but could also potentially save yards the substantial expense of rehiring and retraining employees. Furthermore, training standards would be systematized across the Gulf Coast. One of the challenges that the consortium has faced thus far is the tendency of companies to regard one another as competitors rather than partners.

Another important influence on the local labor environment is Alabama's status as a right to work state. None of the major shipyards in south Mobile County is unionized or employs

unionized workers. However, in late-March of 2007, a National Labor Relations Board ruled that Austal USA had broken U.S. labor laws five years earlier in an anti-union drive (Amy 2011). Although unions play a very small direct role in the area's shipbuilding and fabrication industry, the presence of unions in other industries may create upward pressure on wages.

2.5.2.2. Alternatives for Skilled Workers

The economic climate in south Mobile County is more diverse than that found in many other Gulf Coast communities. A number of industries compete for available skilled labor, and local work opportunities depend on a wide range of industrial cycles. The shipbuilding and fabrication industry is one of the area's major employers, but does not dominate the industrial scene as is the case in some other Gulf Coast communities. The shipbuilding and fabrication yards, the aerospace industry, industrial construction, steel mills, and petrochemical refineries are the largest employers associated with manufacturing. Aside from ST Mobile Aerospace Inc., Atlantic Marine, Austal, and Bender employ the greatest numbers of workers (Mobile Area Chamber of Commerce 2011). Industrial development efforts in south Mobile County generally focus on more than just shipbuilding and fabrication. For example, recently established training programs do not specifically funnel trainees into shipbuilding and fabrication or other local industries. However, in line with the attempt to cultivate a public image of Mobile as a global, high-tech city, city authorities have given significant attention to the aerospace industry—a major player in the local economy and prominently represented at the showcase Brookley Complex.

Local labor contractors generally did not offer health or job benefits, but this employment option was preferred by a number of local workers and recognized as an important competitor by many in the yards. Working for some labor contractors required leaving south Mobile County, whereas it was possible to work for other contractors locally. As in many other study areas on the Gulf Coast, labor contractors had proliferated rapidly in south Mobile County and, in the mid-2000s, were present in significant numbers in some large yards. Thus, while managers of large yards often spoke negatively about the effect of labor contractors on the workforce, they also resorted to using them to address labor shortages and to curtail the impacts of industrial cycles.

Specialization and related factors affect the possibility and desirability of movement among local shipyards. For instance, some workers and managers said that employment at the Austal yard required particular training, because the yard worked exclusively with aluminum. Those in shipbuilding commonly held certain materials are cleaner to work with than others. Shipyards and fabrication shops do not solely employ skilled workers; they also hire unskilled laborers to perform janitorial duties, and do general cleanup or other work. Refinery work was less frequently mentioned as a source of competition for the yards, but wages and stability of work in the refineries were also considered superior to those in the yards. As in other Gulf Coast communities, the offshore oil industry constituted another potentially lucrative source of employment for skilled laborers.

The main sources of employment in Bayou La Batre and Coden are the seafood industry and the shipbuilding and fabrication industry. The seafood industry includes the fishermen, oystermen, crabbers, and shrimpers (with some individuals catching all types of seafood and others focusing on just one or two), as well as seafood brokers and processing plant workers and owners. Historically, children began helping their parents at a young age and dropped out of school before earning high school diplomas to work fulltime on family-operated boats. For some of those who finished high school and continued on to college, the industry was lucrative enough

for work during the summer break to pay college costs for the next year, until recently. Since the fishing industry's decline, parents and young people themselves have viewed the industry as less desirable for young people, because its work is unstable, dangerous, and physically uncomfortable. Yet, some south Mobile County residents still highly prize characteristics of the fisher's life style: being one's own boss, keeping one's own hours, and having an opportunity to be self-sufficient. In the past, it was fairly common for shrimpers to work in shipyards during the off-season. However, it was unclear whether the practice persisted into the present.

Although seafood processing plants offer a considerable number of jobs, it is unusual for individuals to move between that industry and manufacturing industries, such as shipbuilding and fabrication. Most positions in seafood processing are low paid and require few skills, which means that seafood industry employees would find it difficult to enter industrial manufacturing. Shipbuilders and fabricators would be equally unlikely to take pay cuts to enter the seafood processing industry.

Residents and workers regularly commute between south Mobile County and the City of Mobile or Pascagoula, traveling as needed to find suitable employment. Shipyard workers—some from the area and others from outlying communities who drove in to work—frequently compared their shipyards with large yards nearby, especially Northrop Grumman's Ingalls yard in Pascagoula, Mississippi (see Chapter 4, this volume). The differences they highlighted were that the Ingalls yard is much larger, employing at least 10,000 people; that many of its workers are union members; that the company provides benefits and offers training to its employees; and that the company requires mandatory drug testing before an individual is hired and, after hiring, regular random testing. For those who said they did not want to work for Northrop Grumman, common reasons included lack of support for (or active opposition to) unions, wishing to avoid mandatory drug tests, and discomfort with the impersonal feel of a larger yard.

Study participants generally perceived construction, offshore work, and work in the petrochemical industry to be more lucrative, safer, and cleaner than jobs in the seafood or shipbuilding industries. The boom in home and industrial construction after Hurricane Katrina also provided opportunities for individuals to start small businesses. Other individuals launched businesses to supply or do contract work for the shipyards.

Residents of south Mobile County were routinely employed out of town, particularly as contractors or in the offshore oil and gas industry. Residents liked both options, which they considered safer, cleaner, more lucrative, and, in some cases, reportedly offered better benefits than local employment. Mobility between working for the shipyards and working in the offshore oil and gas industry was primarily tied, study participants reported, to life transitions. Some people begin working offshore because they need more money or move into shipbuilding from offshore employment because they want to spend more time with their families. Employees and yard owners who start building vessels for the offshore industry can use their inside knowledge of the industry to their advantage. Local residents with experience in construction (especially welding) or on boats, and those with mariner's licenses were well positioned to go into shipbuilding and fabrication for offshore industry.

The Chevron Refinery in Pascagoula, Mississippi has also provided stable, well-paid job opportunities for willing commuters. None of the workers or company owners who participated in this study said they had worked in the gas plants or talked about others who had. The plants hire relatively few employees, and turnover is likely to be low. The Shell Yellow Hammer Plant in Coden, for example, employs around 30 people and varying numbers of contractors (Shell n.d.).

2.5.2.3. Finding Out About Work

In south Mobile County, as in all other study areas, family, friend, and worker based social networks were the principal means for workers to find out about jobs and training opportunities, and one of the main ways for employers to find willing, skilled workers for various positions. Many of the qualified workers involved in south Mobile County's shipbuilding and fabrication industry have worked at most of the yards and retain contacts at all of them. Likewise, employers often found workers during boom cycles by contacting previous employees. Furthermore, Mobile's three large yards had all established steady relationships with Alabama Industrial Training (AIDT) and Build Mobile, the two major community-sponsored training programs (PP016 2008). Managers of these shipyards described these training programs as among their foremost sources of new employees (PP056 2008; PP057 2008; PP058 2008).

The area's shipyards differed with respect to their managers' perceptions of workforce stability and the ease of finding workers. Managers of some smaller yards noted that training happened on the job and workers could move into higher-skilled positions through testing (VP021 2007; VP068 2008). Some managers claimed to find workers with the skills they needed through social networks, pools of walk-in applicants, and the occasional advertisement (VP023 2007; VP068 2008). One noted that he prefers to hire new employees who have been referred by current employees because that way they already know something about the yard (VP023 2007). Yards with this kind of hiring practice tended not to have relationships with training programs.

Aside from social networks and word of mouth, workers could acquire information about job and training opportunities from various media outlets. The area's three large yards posted information about at least a portion of available jobs on company websites. Local radio stations and newspapers ran advertisements for community training programs and shipyards. Furthermore, local roadway signs regularly advertised job openings in the yards. The community college system was another source of information about the industry, including job and training opportunities, for potential workers.

In south Mobile County it is also common practice, the field researchers observed, for someone seeking a job to drive up and down the bayous asking at shipyards about hiring. During boom periods, men may quit work at one shipyard in the morning, drive to another yard just up or down the bayou and present themselves at the gate, and hire on at the second yard in the afternoon. During slow periods, many yards post signs that they are not hiring on their doors, often in English, Spanish, and Vietnamese.

2.5.2.4. Establishing and Maintaining a Workforce

Given that work in industrial construction or the local refineries generally paid better than work on the yards, one could question why local residents continued to accept work on the yards at all. One obvious reason is a lack of sufficient numbers of "good" refinery or industrial construction jobs for the area's skilled workers. A reason closely connected to necessity, according to some workers and managers, was that refineries and industrial construction required higher levels of skill and expertise than shipyard work. By contrast, some of the large shipyards would hire second class or even untrained workers. More positively, work on the shipyards was perceived as providing greater variety and novelty in types of work, and greater flexibility with regard to worker behavior and schedules. For example, one large yard had a reputation among workers for being willing to rehire past workers, including those who had quit their jobs without notice. Managers of large yards acknowledged, sometimes grudgingly, the necessity of flexibility

in dealing with employees. In some cases, flexibility included overlooking employees' past problems, such as drug use and absenteeism. Passing a drug test was a hiring requirement at all three large yards. However, after a given period of time, the yards would generally rehire workers who had failed drug tests.

Some companies in the study area offer benefits to an employee, or to an employee and his or her family, whereas others pay higher wages without providing benefits. Some companies offer overtime as a matter of course, but others rarely pay workers for more than 40 hours a week. When jobs are plentiful, the employees can choose the combination of wages and benefits that best fits their own family situation and needs.

In Mobile County training and education are a topic of interest to business owners and workers. In Mobile County, the proportion of people who have not graduated from high school decreased from 57.2% in 1970 to 18.5% in 2007, while the proportion of people with college degrees or more increased from 7.5% to 19.3% in 2007. In the City of Mobile, the proportions of people holding college degrees and high school diplomas have been above state and national averages. As of 2007, Baldwin County residents with a high school diploma or more (82%) was above the state (75.2%) and national (80.4%) averages. The proportion of county residents with college degrees (23.1%) was above the state average (19%) and approaching the national average (24.4%) (see Appendix E).

AIDT and Build Mobile are the two major sources of public training open to the local workforce, as unions currently have very little impact on the shipbuilding and fabrication industry in south Mobile County. Both programs started up in the new millennium in response to concerns of local shipyards and other businesses about the availability of skilled labor. Thus, the programs do not explicitly train workers for conditions or types of work in the shipyards, but rather aim to provide a more general array of skills suitable for many local industries. Training instructors were generally positive about their programs' impacts on the local economy, but some expressed reservations regarding the capacity of training programs to address the extent of the labor shortage. The programs generally featured sessions attended by 80-100 students and lasted for a few months. During 2008, the programs were free of charge and open to anyone who cared to apply, but, in 2010, state budget cuts forced Build Mobile to start charging for some of its classes (Busby 2010). Instructors stated that spots in the training programs filled up rapidly and that the programs were generally full. They also emphasized steps to inculcate a more official, "real life" work atmosphere in the training program. These included drug testing for trainees, using time clocks for sessions, and limiting a trainee's number of absences before expulsion. The focus on constructing a "real life" work environment also included the physical setup of the programs, with some outdoor workspaces and layout approximating what would be found in industry.

Relationships between the yards and the training programs were not always entirely smooth. Some training programs were accused of pushing trainees through before they were actually ready, some managers and veteran workers at the large yards complained, and then unloading trainees on local industry to keep up program numbers. Another complaint was directed at training program graduates who would attempt to pass themselves off as having a higher skill level than they actually possessed or would quickly demand high wages. Nevertheless even critics of the training programs admitted that they served a valuable purpose in the community.

Bishop State campuses, source of fee-based training options, offered various vocational-technical programs in addition to two-year Associate's Degree programs. Vo-tech programs are considerably longer than the free community-sponsored training programs. Students holding

degrees or certificates from accredited programs were generally qualified for higher-paying work in industrial construction or other local industries, and, therefore, may have been reluctant to work on the yards. Local yard managers did not mention vo-tech program graduates as constituting a sizable portion of their workforce as frequently as graduates of community-sponsored programs.

Some local shipyards had themselves developed or expanded in-house training programs in recent years. Participants received training geared towards shipbuilding and fabrication and were expected to put their training to use within the company. The shipyard programs differed in size, duration, and formality. Some programs lasted for a set amount of time, in others, trainees graduated as soon as they could pass certification tests. The shipyard programs were intended not only to teach workers basic skills but also to introduce them to the rigors of actual industry working conditions. Thus, attrition rates were often quite high. The notion of career paths had come into fashion at the large shipyards as another incentive to draw and keep workers. This centered on providing workers with a clear, rapid system of advancement. This was meant to address the lack of transparency between management and labor that some felt negatively affected the industry. Some workers also reported attending training programs at yards elsewhere, specifically in Pascagoula and Mobile, and at the community colleges there.

Mobile County School District's technical education program includes concentrations in agriculture, health sciences, and computer technology, and the "school to work" program, which aims to facilitate the entry of skilled workers into the economy. The program begins in 9th grade and ends after two years of technical education at Bishop State Community College. During those years, the "Business Industry-School Relationship" regularly brings members of local industry to the schools to discuss and promote career opportunities with students (Mobile County Public Schools 2009). According to one high school official, these courses provide the students with concrete skills and, school officials hope, encourage them to stay enrolled. At the same time, such programs also make it easier for students who drop out to get positions on the yards (VP010 2007). Several large local yards were involved in this program for high schools, and their Human Resources staff or craft specialists regularly visited schools. Managers of local yards considered this an effective strategy, because it evinced the yard's concern with the local community and workforce, and because it put high school age students in contact with workers, who had often graduated from the Mobile School District and had life experiences with which the students could identity (PP036 2008; PP056 2008; PP057 2008). The large local yards also gave vocational school students tours, emphasizing career possibilities and chances to lead a successful life without pursuing the traditional four-year college curriculum.

Many local shipyard and fabrication industry workers also received on-the-job training, thereby leveraging skills acquired at home or in other jobs. Skilled labor is valued within the industry, and success requires practical knowledge and experience, not necessarily degrees. Some residents of south Mobile County perceive formal education as more important today than in the past. Nevertheless, many shipyard and fabrication workers reported that they had learned most of the necessary skills for employment while helping family members or friends. Whether acquiring a basic understanding of tools and measurements or learning to take instruction and do hard labor, individuals reported that the lessons they learned helped them get into the workforce and to advance. One shipyard owner noted: "I had no formal education, it was by trial and error. My grandfather and my father taught me every action has a reaction. You can operate under that, it's not complicated" (Gazzier 2008). Still, due to the lack of industry-wide certification for many shipyard/fabrication crafts, competencies developed in one region or program may not be

recognized automatically elsewhere. Consequently, each worker may have a different way of doing things and require more on-the-job training. As one welder put it:

> Now they have tech schools, I didn't know about them, so I had mostly on-the-job training and was self-taught. You just try and learn enough to move up, and you have to relearn something everywhere you go, because every place has different ways of doing it. You show up and say you already know, and they say, well, you have to do this our way. (VP110 2007)

During the study period, workforce shortages in the area were acute, due, in part, to rebuilding after Hurricane Katrina. Many crafts used in a shipyard can be applied to construction, and post-hurricane construction offered better wages. Shipyard workers reported that, to increase their salaries, they must be promoted, move to a union yard, or leave the industry. Although shipbuilding and fabrication yards may not compete for work, they do regularly compete for workers. Many companies did not take all contracts offered to them because they could not find enough workers. According to Joseph Rodriguez (2008), a local yard owner: "We tend to sign contracts and promise a delivery schedule that we can meet with our current workforce, rather than signing stuff that I've got to go find people to be able to build. I've avoided the temptation."

The Bayou La Batre and Coden shipbuilding industry labor pools have generally consisted of locals and residents of surrounding communities, supplemented by outsiders who move into the town or the unincorporated community looking for work and laborers brought into fill specific positions. As locals opt for jobs outside the shipbuilding industry, this situation is changing. The industry's 1980s downturn left a glut of qualified shipyard workers and reduced enthusiasm for entering the industry by learning a trade. People remain wary of the industry's cyclical character and council others to seek different types of employment. In addition, over the years, expectations have shifted, and now many local youth view college educations and white collar careers as both more possible and more desirable. Finally, as noted above, Hurricane Katrina destroyed over half of Bayou La Batre and Coden's housing and displaced workers outside the immediate area.

Even when locals enter the shipbuilding industry, they may leave the Bayou La Batre-Coden area to find work. Despite the local competition for workers, some individuals are willing to commute as long as two hours to work if they find a job they consider attractive. Although yards outside the area tend to pay higher wages, aside from requiring a commute, they generally have stricter pay grade guidelines—what might be considered first class in Coden, for example, might only be second class in Mobile—which in effect reduces an employee's earning potential.

In the past, south Mobile County supplemented its local workforce with people moving in from economically depressed parts of the country, but this is no longer the case. As one former human resources employee at a south Mobile County shipyard noted: "We used to have people sleeping in their car to hire in and go to work. Or you'd get people who would move in and buy somewhere, or stay anywhere until they can move the family down" (VP008b 2008). Today, she added, people from the country's depressed areas would no longer be moving to Bayou La Batre to work in the shipyards, where the pay is not high enough compared to pay in other areas and industries. This includes surrounding communities such as Mobile and Pascagoula. The loss of housing stock after Hurricane Katrina, and in particular the lack of rental property in Bayou La Batre and Coden, has also made in-migration nearly impossible. An administrator at another yard noted:

> A lot of people, you hear about West Virginia, Detroit and areas with high unemployment, they have the skills, they could move here and find profitable employment, good money, first class on the shipyard is making mid-20s per hour. [. . .] I would like to see a program where the government looks at areas with commerce and areas with an oversupply of workers and have a tax break, incentives, or grants to relocate. It's hard for a family to move, it's expensive. White collar workers move easier, management. (VP068 2008)

Though this suggestion was made more than once, others noted that the Alabama Gulf Coast would not necessarily be considered a desirable location for people from other parts of the country.

2.5.2.5. Temporary Workers

Another recent development among south Mobile County shipyards was the increased use of alternate sources of labor. Economic and social development had substantially increased the use of foreign labor in the shipyards and was phrased by management as a necessity stemming from the lack of local workers. Foreign laborers were generally viewed in complementary terms by management with regards to their work ethic. During the summer of 2008, the employment of foreign H-2B workers had been curtailed for several reasons. Chief among these was the cost and the bad publicity that such labor practices had received in other locations on the Gulf Coast. Two additional reasons that yard managers reported were the cost of obtaining visas for workers and the expense of training workers who lacked adequate skill levels, or were unfamiliar with certain equipment and processes. In order to avoid difficulties associated with obtaining visas for workers, some yards hired foreign workers through contractors, who became responsible for acquiring work visas.

Although employment of H-2B visa workers was more prevalent among the study area's seafood processing plants, two of the shipyards worked with labor contractors to bring in H-2B visa workers from China. One shipyard manager, disappointed by the length of the recruitment process and the skill level of the workers, did not expect to repeat the experiment. Local concerns about the immigrant workers focused on their treatment, rather than that they might take jobs from locals. The workers had few transportation options, which meant that they often had to walk along busy highways, and they paid unreasonable charges for housing with overcrowded living conditions. At the time of the fieldwork for the study another yard was using work-release prison labor, with good results (PP056 2008).

Since 2006, a significant number of workers have arrived in the Gulf of Mexico region under the U.S. government's H-2B program (see Chapter 2, Volume III). Table 2.6 shows the number of H-2B visas that were certified to companies operating in Mobile between 2000 and 2008. Bayou La Batre and Coden have hosted both immigrant and nonimmigrant laborers to work in the seafood industry for decades. On only two occasions did shipyards successfully obtain permits for hiring workers under the H-2B program (see Table 2.7).

During fieldwork, the research team also found small numbers of work release laborers (incarcerated people, especially short-timers for nonviolent crimes) in local yards and community training programs. Management at one large local yard emphasized work release labor as an effective way to increase the workforce while simultaneously serving the community by employing individuals who would likely find it very difficult to obtain work. Plans were underway to increase recruitment from this source. However, one of the problems that arose with

the use of work release labor was where to house the workers. This problem had been partially resolved when the shipyard formed relationships with various non-profit and assistance organizations in the local community and in Alabama more generally. These groups often represented various denominations of the Christian faith. The community impacts of work release labor practices must be monitored closely. During the fieldwork, work release and H-2B workers were employed in insufficient numbers at Mobile yards to have palpable impacts. If local yards continue to make use of these and perhaps other alternative sources of employment, then it will be important to understand how these developments may come to play a role in ongoing community dynamics. Furthermore, it will be necessary to understand how work release labor and other "alternative" labor are incorporated into the shipbuilding and fabrication industry, and the long-term effects of the incorporation on local communities.

Table 2.6

H-2B Visa Certifications/Requests for South Mobile County, 2000-2010*

Year	Construction	Fabrication	Fishing	Hospitality	Other	Timber
1999	0/0	0/0	0/0	0/0	0/0	0/0
2000	0/0	0/0	19/19	0/0	0/0	0/0
2001	0/0	10/10	136/136	0/0	9/9	0/0
2002	0/0	0/0	82/82	0/0	0/0	0/0
2003	0/0	0/0	123/123	0/0	0/0	0/0
2004	20/20	0/0	154/154	75/75	0/0	0/0
2005	20/20	0/0	56/56	0/0	0/0	17/17
2006	8/8	181/182	296/296	0/0	0/0	0/0
2007	24/24	399/1200	318/321	10/19	0/0	0/0
2008	0/0	8/4347	268/342	44/64	0/0	0/0
2009	0/0	0/683	163/277	34/53	0/0	0/0
2010	0/0	0/0	83/126	85/85	83/83	0/0

*Includes Bayou La Batre, Irvington, Mobile
Source: U.S. Department of Labor 2011
Note: Construction includes construction worker; fabrication includes all types of welders, pipe fitters, metal fabricators (see Table 2.7 below); fishing includes fisher, shellfish shucker, deckhand fishing vessel, and such; hospitality industry, for restaurants and hotels, includes kitchen helper, food assembler, housekeeper, and such); timber includes forest workers, tree planters, and such; and other includes everything else.

Table 2.7

H-2B Visas Certified and Denied in Welding and Fabrication-Related Jobs in South Mobile County

Year	City	Job Type	Number Certified	Number Denied
2001	Bayou La Batre	Fabricator Assembler, Metal Products	10	0
2006	Mobile	Ship Carpenter	1	1
2006	Mobile	Pipe Fitter	40	0
2006	Mobile	Shipfitter	140	0
2007	Mobile	Welder Assembler	50	0
2007	Mobile	Welder Fitter	349	801
2008	Bayou La Batre	Sheet Metal Worker	8	2
2008	Irvington	Welder Fitter	0	1000
2008	Irvington	Combination Welder	0	500
2008	Mobile	Welder Assembler	0	250
2008	Mobile	Welder Fitter	0	2587
2009	Irvington	Welder Fitter	0	100
2009	Mobile	Sheet Metal Worker	0	483
2009	Mobile	Welder Fitter	0	100

Source: U.S. Department of Labor 2011

Denials: 2001- 16 Shellfish processing laborers (Bayou La Batre); 2003 – 80 Shellfish processing laborers (Bayou La Batre); 2008 – 70 Shellfish shucker (Bayou La Batre), 2008- 2 Sheet Metal Workers (Bayou La Batre).

2.5.3. Impact of the Hurricanes (2005 and 2008)

Hurricane casualties and property damage were not as severe in the south Mobile County region as they were at other points along the Gulf Coast. Yet, these storms still caused significant damage to local industry and affected the available workforce in various ways. The effects of the hurricanes, combined with general trends in local training and education, increased concerns about where and how to acquire a skilled labor force for both companies directly involved in shipbuilding and fabrication and the business community at large, especially the manufacturing sector. However, at the time of fieldwork in 2007-2009, many in shipbuilding and fabrication felt they had overcome problems associated with the 2005 hurricanes.

The region had been in trouble economically before 2005, especially due to rising gas prices and falling shrimp prices, but Hurricane Katrina struck a devastating blow to south Mobile County (see Gaillard et al.2008). Bayou La Batre had a historic downtown, alongside the bayou, with neighborhood markets, barbershops, restaurants, and shops. By 2008, some sites of major commercial blocks stood empty, the buildings condemned and torn down after the hurricane. The majority of the commercial activity once took place on higher ground, but not even those sites were spared the impacts of Katrina. It has been estimated that when all the buildings are finally repaired or removed, around one-half of the structures in town will have been destroyed because

of Katrina (Seacat 2007:29). The loss of many homes and neighborhoods, slow government response, and uncertainty about the future led to significant out-migration, which had not been reversed by the time of fieldwork for this study. In addition to receiving considerable help from volunteers, Bayou La Batre received federal funds from the Federal Emergency Management Agency (FEMA) and the Department of Housing and Urban Development. Lacking administrative mechanisms to apply for Community Development Block Grants (CDBG), FEMA relief funds, and other public resources, the unincorporated areas were unable to take advantage of these monies. The absence of local organizations to coordinate volunteer efforts in the unincorporated areas meant that fewer resources went to them, and allocated resources took longer to arrive. Local residents' perception of being neglected after the hurricane was one reason for the establishment of the South Bay Communities Alliance, a community association designed to give a voice to residents of unincorporated communities in the area.

Plans for the large-scale condominium and tourist development in Bayou La Batre seemed to be moving forward rapidly after Katrina. A January 12, 2006 city ordinance created a "marine resort" zone along the side of the bayou and within it shipyards, loading docks, and seafood houses would be declared "non-conforming," hence be denied permission to expand. In addition, if businesses ceased operating for more than six months or sustained damage of more than 50%, the zoning of the property on which they were located would change, and those businesses would not be allowed to reopen (Gaillard et al. 2008). The new ordinance created significant controversy, resulting in a 2006 Urban Land Institute advisory services panel to address the region's future development. After the panel, which recommended a more modest proposal combining ecocultural tourism and a refurbished waterfront, the condominium and tourist development was put on hold and then cancelled (Urban Land Institute 2006). By October 2006, Bayou La Batre's mayor and city council had decided not to sell the city's waterfront property.

Post-hurricane housing has also been a problem in parts of south Mobile County. Katrina destroyed 500 of the 769 houses in Bayou La Batre (Sayre 2008a). Some neighborhoods in which every residence was occupied now house one or two solitary families, while in other areas more people have been able to rebuild. For many of the area's residents, repairing their houses is not an option, and the City of Bayou La Batre coordinated with FEMA to build a subdivision to house people displaced by Hurricane Katrina. This subdivision is located north of town on Route 188, outside of the hazardous flood zone (Sayre 2008b). There was some concern among community members that the location of this development outside of Bayou La Batre proper would fragment the community and dilute community spirit, while creating economic hardship by making it more difficult to work in town without a car. For some residents, moving homes away from the water also means abandoning the community's maritime heritage.

Many people who had repaired or rebuilt their homes shortly after the hurricane discovered in 2008 that they were no longer in compliance with federal regulations. Many homes predated the National Flood Insurance Program elevation requirements, but, when Hurricane Katrina damaged houses beyond 50% of their value, they lost their grandfathered status and had to come in to compliance. Yet, many homeowners were not made aware of this fact until well after they had finished repairs or reconstruction (Sayre 2008a). As of May 2008, it was estimated that 100 repaired houses required elevation at a cost of $6 million for Bayou La Batre to continue participating in the National Flood Insurance Program (Sayre 2008a).

The cost of obtaining and keeping insurance has also limited rebuilding and housing development. Insurance companies raised rates and refused to write new policies in certain areas. In April 2008, State Farm, the largest property insurance company in Alabama, stopped writing

policies for wind and hail coverage on homes south of I-10 in Mobile County (Amy 2008). That year, one local real estate agent estimated that properties south of I-10 had insurance rates 30-60% higher than comparable properties north of the highway, even though the boundary was arbitrary. The only property sought for housing rentals at the time was waterfront property that could be used by shipyards, where the demand for housing far exceeded supply (VP012 2008). The Alabama state legislature passed two coastal insurance reform bills in May 2008 allowing the formation of captive insurance companies for residential properties and creating a mandatory beach pool for insurance companies (Altman 2008). The long-term impacts of these changes on the housing situation remain uncertain.

Hurricane Katrina did not have the same effect on shipyards and fabrication shops or other industrial businesses. They all suffered losses and considered the event a serious setback, but the hurricane resulted in no shipyard closures. For some shipyards, the hurricane actually created work repairing damaged ships. One yard in Mobile also contracts to do coastal restoration work following hurricanes, and therefore also had increased work.

2.6. DISCUSSION

The shipbuilding and fabrication industry in south Mobile County is at the nexus of a number of industries and a variety of factors. The industry's rapid decline in the 1980s following the severe oil industry downturn is well known, and has been discussed in this chapter. Cycles in the fishing and brownwater, or inland, transportation industries, as well as in government spending, also impact the industry as a whole. This alters workers' options in different ways over time, depending on the mix of shipyards in the area. In the early 2000s, for example, as the fishing industry went into decline and cheap, repossessed boats began appearing on the market, demand for construction of these boats shrunk, and companies moved into construction for other interests, such as offshore oil and brownwater transportation. When such a shift does occur, it allows the workforce reasonably steady employment. During the 1980s, however, there were not enough other markets to sustain the shipbuilding capacity and 30 or so local yards quickly dwindled to around 12, which remained the figure through 2008.

The shipbuilding and fabrication industry's welfare is also linked to availability of supplies for its yards/shops and its clients, as can be seen in the downturn beginning in summer 2008. At that time, steel prices rose, making the product more costly to acquire; fuel prices went up, influencing not only prices on other products but also the ability of the shipbuilders' customers to remain profitable; the credit market became tighter, making it difficult for prospective clients to obtain the necessary funding to pay for new boats. Although different industries were affected to a greater or lesser degree by these events—shrimpers, for example, were already suffering due to low-priced imported shrimp and were particularly susceptible to the increased diesel prices—all the branches of shipbuilding were impacted. This allowed less room for worker movement within the industry than the situations discussed above. In this case, a pre-existing worker shortage attenuated the effects on employees.

During boom times, workers have many more options for employment. At the beginning of the study period in 2007 and early 2008, skilled workers could be assured that they would be hired almost anywhere. If they heard of higher wages at another yard they could leave their current job for the higher pay. Still, this high level of activity was not seen by study participants as matching the boom of the 1970s, when jobs were much more available. Nevertheless, mobility allowed workers not only to search for the highest-paying job or the job with the most overtime, but also to find conditions that they liked and suited their needs at the time. The upturns in the

shipbuilding and fabrication industry have also allowed workers who so desired to start their own businesses—either by opening their own shipyards or related businesses, or by working as shipyard contractors or suppliers.

The analytical results from the economic modeling of the Mobile MSA indicated little or no statistically significant impact of the change in the price of oil on the manufacturing sector in general. However, there were statistically significant results with regard to the unemployment insurance transfers for the finite distributed lag model (see Chapter 2, Volume I) as it relates to manufacturing employment as well as wage and salary jobs; in other words, unemployment insurance transfers increase when manufacturing employment goes down, and vice versa. The research team detected a somewhat significant statistical relationship between the change in the price of oil and the change in manufacturing income. However, as in other study areas along the Gulf of Mexico, this relationship is likely caused by cost of living adjustments in wage contracts for skilled labor. Overall, the results for Mobile are intriguing because the one industry sector, shipbuilding, is clearly trending in the opposite direction from manufacturing generally. As more data become available, further methods of analysis will be able to detect any statistically significant relationships that are not obvious at this time.

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3. SOUTHEAST JACKSON COUNTY

3.1. Introduction

Southern Mississippi is distinguished from the rest of the state, in part, because it has long been an important site for shipbuilding. Jackson County is located in the state's southeast corner, and Pascagoula and Moss Point are the county's principal cities (see Figure 3.1). Named for a nearby American Indian nation of Choctaw lineage,[4] Pascagoula is one of Mississippi's oldest settlements and home to its largest port. By the beginning of the 20th century, two neighboring communities—Krebsville (named after the shipbuilding Krebs family) and Scranton—had merged with Pascagoula, more than doubling the seaport's population to 4,063.

The City of Moss Point, officially incorporated in 1901, firmly established itself as a timber producer through the early part of the century, although timber production had occurred in the area since the 19th century.

Today, Huntington Industries' Ingalls Shipyard[5] is the largest employer in the city of Pascagoula and the largest manufacturer in the state of Mississippi. Moss Point is less well-known for its involvement with shipbuilding and fabrication, but the industry experienced resurgence there during the 1980s and has grown over the past three decades.

[4] The name "Singing River," refers to a special sound, a Pascagoula Indian death chant, emanating from the flowing waters of the Pascagoula River. A local myth suggests that the river still sings the mournful chant of the Pascagoulas. To avoid fighting the superior Biloxi tribe, the Pascagoulas chose mass suicide and marched into the river while singing.

[5] The shipyard, which is currently owned by Huntington Industries, started out and is still referred to by most locals as "Ingalls." At the time of fieldwork for this study, it was owned by Northrop Grumman. In this profile, it is referred to by all three names depending on the time period involved. Some workers and local residents differentiated between Northrop Grumman and Ingalls in terms of, among other things, work conditions and management styles.

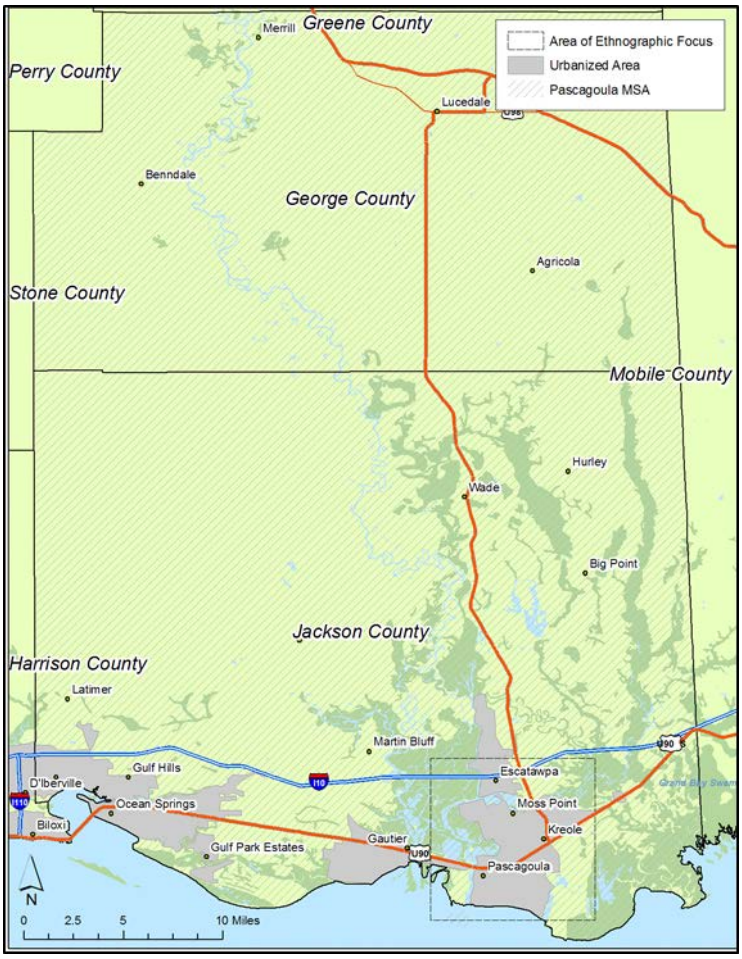

Figure 3.1. Map of Jackson County and surrounding communities.

Map was created in 2011 using data packages included with the ArcGIS software suite. Sources used to create these data layers included: ArcWorld/ESRI, National Atlas of the United States, Tele Atlas, U.S. Bureau of Transportation Statistics, U.S. Census, and U.S. Geological Survey.

3.1.1. General Description

Southeastern Jackson County generally, and its major cities, Pascagoula and Moss Point, are challenging to classify demographically because they fall within several official geographical, political, or statistical units. Both cities are in Jackson County, but the majority of the county's population resides in suburban areas outside the city limits of either one (see Section 3.5 below). The Pascagoula Metropolitan Statistical Area (MSA) includes all areas within both Jackson and George counties; many George County residents commute to Jackson County to work. Jackson County is also part of the Greater Biloxi Labor Market Area (LMA), which extends along the Gulf Coast from New Orleans, Louisiana to Mobile, Alabama (Killian and Tolbert 1993). The greater Biloxi area's economy has recently been dominated by recreation, including the expanding casino industry, and manufacturing related to the shipyards in Gulfport and Pascagoula. The Chevron oil refinery, new businesses associated with the aerospace industries,

and natural gas companies showed signs of growth during 2007 and 2008, when the fieldwork for this study was being conducted.

In the 19th century, southeast Jackson County was recognized as a prime location for lumber, particularly virgin pine, but Pascagoula's early growth as a lumber and shipping port was halted in 1906, when a hurricane destroyed a significant portion of the area's standing timber, along with the lumber mills. Although this marked the beginning of the end of the local lumber industry (Higginbotham 1967), the industry nevertheless contributed to the growth of shipbuilding. Many mills had their own shipbuilding operations (Sanborn Fire Insurance Maps n.d.; Higginbotham 1967), and the need to transport lumber spurred development of the region's waterways. For example, as early as 1875 the federal government recognized the significance of Pascagoula and made the first of numerous investments in dredging the harbor to improve the navigability of the Pascagoula River and its major tributary, the Escatawpa (Port of Pascagoula 2009; Rogers n.d.). As noted above, Pascagoula continues to be centered on shipbuilding. During the 1970s, its population grew considerably as the shipbuilding and fabrication industry expanded rapidly after local shipyards obtained several major military contracts and, more generally, in response to the decade's boom in the offshore oil industry. Oil prices declined in the 1980s and difficulties ensued for many, though not all, yards and shops associated with shipbuilding and fabrication in Jackson County and other locations along the Gulf Coast. During this period, Pascagoula's population fell slightly before rising once again in the 1990s. In the new millennium, the city experienced a population loss associated with Hurricane Katrina, which made it increasingly difficult for local businesses to locate the workforce they required.

Moss Point and Escatawpa, to the north, now strive to balance industrial development with a more recent emphasis on environmental attractions and ecotourism. From World War II until recently, the paper and chemical industries dominated Moss Point's economy. Fish processing, historically a significant industry and source of employment, remains one today. After decades of stagnation, the shipbuilding and fabrication industry once again assumed an important position in the 1980s. Escatawpa, the census-designated place immediately north of Moss Point, is rarely distinguished from Moss Point by people living in nearby municipalities, but Escatawpa residents sometimes classify it separately. Today, several fabrication shops are located in Escatawpa, although historically its residents worked in the paper and chemical industries. The town's growth was tied to the growth of the paper mill, which drew employees from central Mississippi as well as parts of Alabama. The closures of the paper mill, chemical plant and one or two other important industries in the region created economic hardships, from which communities had not yet recovered when Hurricane Katrina hit in 2005, creating special challenges for residents and leaders. Moss Point, once known as "The Industrial City," recently changed its name to "The River City" in an attempt to develop its ecotourism industry. Capitalizing on the city's proximity to the Pascagoula River, the largest undammed river system in the contiguous 48 states, locals began raising money for a new Audubon Center.

Gautier, a small community northwest of Pascagoula, is home to Mississippi Gulf Coast Community College (MGCCC). Farther west is Ocean Springs, self-styled as a cosmopolitan community, and with a notable artist population. Beyond Ocean Springs lies Harrison County, home of Gulfport and Biloxi with their large casinos, a few shipyards, Keesler Air Force Base, a large retail industry and a declining but still substantial seafood industry. From an economic perspective, Pascagoula has more in common with some areas of south Mobile County, Alabama, than with Harrison County or western sections of Jackson County. Despite clear differences among coastal Mississippi communities, the cities and towns in southeast Jackson

County share a sense of being culturally and economically distinct from more agriculturally-based inland areas, even though a significant portion of the coastal workforce commutes from inland areas. In and near Pascagoula specifically, this distinctiveness is attributed to the influence of the Navy, local industries that attract educated people from around the country, tourism, and the presence of retirement communities.

3.1.2. Principal Ports and Key Infrastructure

The Port of Pascagoula, one of a dozen and a half ports in Mississippi, is the state's largest and most important due to its strategic position along the Pascagoula River and on the Gulf Coast (Port of Pascagoula 2009). Initially developed in the 1830s when the east bank of the Pascagoula River was first dredged, it is a busy seaport, fishing center, and industrial site comprising public and private facilities that houses shipbuilding, petroleum, and chemical businesses. It includes the Pascagoula River Harbor and the Bayou Casotte Harbor, the latter opened in the 1950s (Figure 3.2). Given the port's proximity to deep water, it is ideal for large-scale cargo shipping, shipbuilding, and fabrication of offshore vessels and structures.

The Port of Pascagoula is operated by the Jackson County Port Authority, which was established in 1956. Both are governed by the Jackson County Port Authority Board of Commissioners, a nine-member board with five members appointed by the Jackson County Board of Supervisors and four appointed by the governor of the State of Mississippi. The Jackson County Port Authority operates public terminals and leases property within its jurisdiction to private entities, including the Mississippi Phosphates Corporation, Gulf LNG Energy, Chevron Pascagoula Refinery, First Chemical Corporation, VT Halter Marine, Signal International., and Northrop Grumman Shipbuilding. The port also houses offices of the National Oceanic and Atmospheric Administration (NOAA) and Naval Station Pascagoula. Some fabrication and shipyards lease property at the port; others are on private property gradually acquired over time (see Section 3.2 below). Yards on private property pay only minimal fees to the port and their use of it is generally limited to use of the channel, which typically occurs only when companies transport vessels and rigs out of their yards.

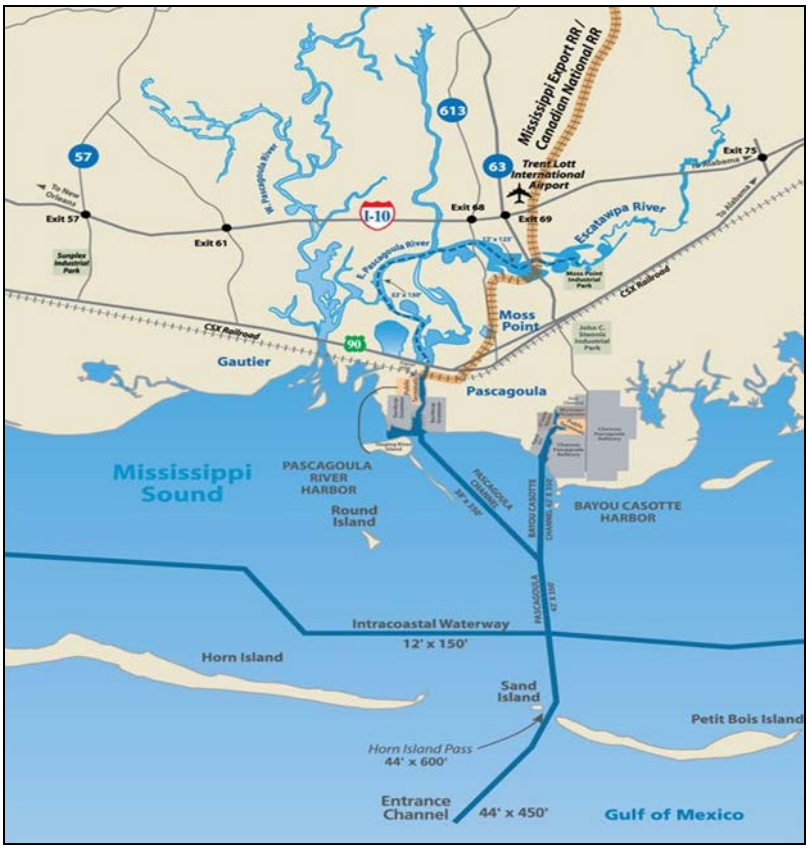

Figure 3.2. Port of Pascagoula and nearby harbors.

Source: Port of Pascagoula, n.d.

Three major highways, I-90, I-63, and I-613, run through Pascagoula and Moss Point. Interstate highway I-10 is located 2 and 5 miles from Moss Point and Pascagoula, respectively. The larger shipyards in Moss Point are located on the banks of the Escatawpa and Pascagoula rivers. The local fish processing plant is also located there.

The current state of shipbuilding and fabrication in Pascagoula and Moss Point is best understood in the context of the industry's historical development in the region. As the following section demonstrates, there are close connections between older historical events and trends, and current circumstances in these communities.

3.1.3. Current Industrial Profile

Chapter 1 of this volume illustrates the diversity of the shipbuilding and fabrication industry by describing classification schemes for yards, based on company ownership and the people who make up the industry. Using the company ownership classification, yards in southeast Jackson County are representative of all four types (Figure 3.3): yards that service or fabricate only rigs and platforms, yards that service or fabricate vessels as well as rigs or platforms, yards that service or fabricate only vessels, and small specialty shops. The on-land requirements of these yards include parking areas capable of handling large crews and their vehicles, as well as covered and uncovered work areas, and large storage areas for components and other structural steel that will eventually be placed on a rig or platform or hauled away for scrap.

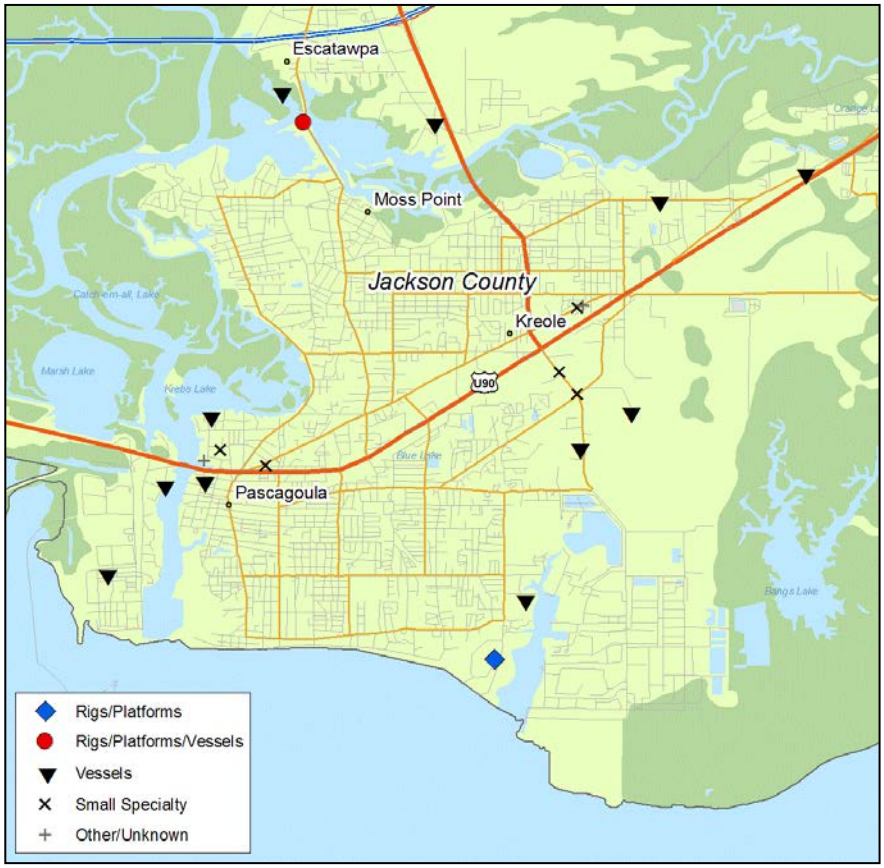

Figure 3.3. Fabrication and shipyards in the southeast Jackson County study area.

Map was created in 2011 using data packages included with the ArcGIS software suite. Sources used to create these data layers included: ArcWorld/ESRI, National Atlas of the United States, Tele Atlas, U.S. Bureau of Transportation Statistics, U.S. Census, and U.S. Geological Survey. Additional shipyard data assembled by Victoria Phaneuf, 2008-2010, from multiple sources, primarily company websites, business directories, and ethnographic data collection.

3.2. HISTORY

Production of vessels and rigs in southeast Jackson County has fluctuated over time (see Colton n.d.a). The World War II shipbuilding boom was followed by another boom associated with the 1950s expansion of the offshore petroleum industry and the fishing industry. Quantitatively, production peaked in the late-1970s, due to the completion of many military vessels, tow boats, fishing vessels, and offshore service vessels (OSVs). Though generally dominated by the construction of military vessels, Ingalls Shipyard has periodically manufactured rigs and vessels for the offshore petroleum industry during temporary declines in military contracts. The production of both oilfield and fishing vessels declined during the 1980s, and several yards went out of business, but by the 21st century both large and small fabricators were again operating facilities in the region.

3.2.1. Maritime and Shipbuilding History to 1945

As noted above, southeast Jackson County was naturally suited to shipbuilding and lumbering, because the nearby Piney Woods forest provided ample timber for both boatbuilding and trade. Native Americans had constructed dugouts along the Pascagoula River system for centuries. French Canadian explorers Jean Baptiste Le Moyne, Sieur de Bienville, and his older brother, Pierre LeMoyne, Sieur d'Iberville, first surveyed the region in 1699. Recognizing the abundant timber, D'Iberville, whose party included a shipbuilder, identified areas especially suited to shipbuilding and pitch and tar production. For two centuries, families of European settlers built large and small vessels in their yards and passed down the knowledge and expertise necessary to keep the craft thriving (Howard 1947, cited in Ziglar 1961, 1974). Some companies doubled as boat builders and lumber yards (Gutierrez 1987). After an 1893 hurricane destroyed most of the schooner fleet on the Mississippi Gulf Coast, local boat builders designed a special schooner suited to the bayous, oyster reefs, and shallow bays and lakes. The Biloxi Schooner, as it became known, was 50 to 60 feet long and characterized by a broad beam, shallow draft, and increased sail power. Therefore, it could easily sail in and out of shallow waters, but had sufficient room for larger crews to work on the decks. Over the next several decades, the shipbuilding and seafood industries grew side by side (Nuwer 2010). At the same time, state and local funds were secured to continue to deepen and widen area channels to enable the passage of larger vessels.

The outbreak of World War I greatly expanded the scale of local shipbuilding and was the first of several booms. After the federal government created the Emergency Fleet Corporation in 1917 to produce wooden and steel cargo vessels to carry troops and supplies to Europe, southeast Jackson County emerged as a significant shipbuilding hub to support the Allied effort. The shipbuilders and skilled craftsmen of Pascagoula and Moss Point readily transferred knowledge gained from small-scale shipbuilding to much larger enterprises and some learned to work with steel, a new material for the region's shipyards (Cain 1983; Ziglar 1961).

Initially, shipbuilders faced significant wartime labor shortages. Local papers, such as the Pascagoula Chronicle and the Daily Herald, regularly printed advertisements for carpenters and other skilled workers. Soon the region's population increased to meet demand. Together, the four largest shipyards—Dantzler Shipbuilding and Drydock Company, Hodges Shipbuilding, Dierks-Blodgett Shipbuilding Company, and International Shipbuilding Company (owned by Henry Piaggio and known as Piaggio's by locals)—eventually employed more than 1,500 people. Although new subdivisions and makeshift housing units sprouted up to handle growing

population pressure, finding local accommodations remained a problem for shipyard workers (Daily Herald 1917; Gutierrez 1987; Cangelosi and Ford 1998).

The shipbuilding boom collapsed with the end of the war. Orders were canceled, projects that were underway remained incomplete, and the big yards suffered immensely. Dantzler laid off 500 men on a single day. Pascagoula's population declined with such large scale layoffs. But not all yards shut their gates. Dantzler, along with local tugboat operator H.H. Colle, purchased the Frentz Shipbuilding Company, and renamed it the Gulf Ship Company. Piaggio, less reliant on government contracts, managed to operate for a few more years, but worker unrest, declining demand for ships, and the collapse of Italian lira ended the Piaggio enterprise in 1921. Small yards, such as Gulf Ship, M. M. Fletchas, and the Pointevent Brothers, continued to launch vessels, some of which earned notoriety for Pascagoula, the once-thriving port city. During Prohibition, Pascagoula shipyards became known for building the "best damn rum-running boats in the world." But Pascagoula would have to wait nearly two decades to experience another shipbuilding boom (Cangelosi and Ford 1998).

Although the Great Depression severely damaged Pascagoula's economy and hurt the local shipbuilding industry, most area shipbuilders survived to see the region emerge as the center of Gulf Coast shipbuilding during World War II. Ferdinand B. Walker, relocating from Krebs Lake to Pascagoula, opened the F.B. Walker and Son's Boatyard in 1930 after purchasing the Gulf Ship Company. Under Walker, the company's yard quickly shifted from wood to steel construction of barges and tugs and went on to make the Walker name synonymous with shipbuilding in Pascagoula (Cangelosi and Ford 1998).

Robert Ingersoll Ingalls developed a shipyard that would become the leader of Pascagoula's next shipbuilding boom. His Ingalls Shipbuilding Company, constructed on the site of the former International Shipbuilding Corporation, would eventually become the Gulf Coast's largest shipbuilder. Ingalls arrived in Pascagoula in 1938 to expand his shipbuilding operations after running several business ventures in Alabama–Ingalls Iron Works, Birmingham Tank Company–and a shipyard in Chickasaw. Throughout the 1930s, the Chickasaw yard continued to grow despite the Great Depression, prompting Ingalls to search for a larger yard closer to a deep water port. Ingalls conceived of his new operation in Pascagoula as the first of its kind: a modern shipyard, which would construct large, all-welded, ocean-going vessels. Jackson County officials, convinced that welding rather than riveting was the wave of the future and assured that the new yard would bring numerous government contracts, jumped at the opportunity and offered Ingalls public money and assistance. A state voter-approved bond issue financed the venture and the Jackson County Port Authority dredged a channel, improved the launch basin, and even drove pilings for the new yard. The yard's first vessels, two all-welded steel barges, were launched in January 1939. The SS *Exchequer* hit the water in October 1940. At 500 feet, it was not only the largest ship ever built in the U.S. south, but it was also the country's first oceangoing cargo vessel with an all-welded steel hull. Several additional large C-3 class cargo ships built for the U.S. Maritime Commission followed in 1940 and 1941 (Ziglar 1974).

The outbreak of war prompted Congress and President Franklin Roosevelt to expand the naval and merchant fleets, which included establishing and developing southern shipyards. As government contracts and workers from across the South poured in, Ingalls launched an average of one ship per month, nearly 100 vessels in all (Ziglar 1974). Its Birmingham plant rolled, fabricated, and sub-assembled steel, which was delivered almost daily by rail, barge and truck (Couch 1964). Ingalls launched numerous C-3 cargo vessels, used primarily to transport freight and troops, and escort aircraft carriers. It also produced three net tenders for the U.S. Navy.

Ingalls ships could be found in all World War II theaters, but perhaps its most famous was the USS *Arthur Middleton*, one of the first ships to transport G.I.'s to battle (Zigler 1961). As the shipyards expanded to meet the maritime country's needs, Pascagoula's population surged.

For the most part, F.B. Walker and Sons, which did not receive many government contracts, carried on with its main business, barge and tug construction. The yard built only a few tenders and tugboats for the Army (Colton n.d.b).

3.2.2. Shipbuilding and Fabrication during the Postwar Period and Early Offshore Oil Industry Expansion, 1950s-1980s

The post-war years proved challenging for Ingalls Shipbuilding and the area's smaller yards. Many workers were laid off, and the companies found work where they could. Many of the cargo ships that Ingalls built during the war returned there afterwards and were converted into commercial cargo ships. Nevertheless, despite the initial post-war decline, when even the largest yards faced possible closure, Pascagoula's shipbuilding industry rebounded. Ingalls, for example, became a principal builder for the U.S. government. Aside from building cargo ships, Ingalls launched a variety of vessels ranging from oil tankers and icebreakers to towboats and passenger ships, and it did some construction for the expanding offshore oil industry. Other yards took advantage of the post-war oil boom to build oilfield vessels as well as fishing vessels, tugs, towboats, and barges.

Ingalls aside, the yard that had the biggest impact on Pascagoula belonged to Arnold Walker. The Walker patriarch, Ferdinand, had died during the war, and left ownership to his sons. After years of working in Ferdinand's business, Arnold sold out to his brothers in 1944 and opened Arnold Walker Shipyard next to Ingalls. A variety of new construction orders kept the yard busy during its brief existence. From 1944 to 1957, the yard produced numerous supply and crew boats for the developing offshore oil industry, along with fishing vessels as well as towboats and barges for inland waters. The company earned the highest praise for its first-rate and innovative OSVs. Expansion and increased orders made 1951 the yard's most successful year. Among its builds were three 61-foot personnel boats for the oil industry, which were described as combining speed with low operating costs and tremendous carrying capacity. The yard also launched one of its first offshore exploration vessels that same year (Workboat 1950). In 1957, Ingalls absorbed Arnold Walker as a subsidiary of Ingalls Shipbuilding. Crewboats launched from the yard were credited to the Arnold Walker Shipyard until the end of 1958 (Ziglar 1961).

Following Arnold Walker's lead, F.B. Walker and Sons also embarked on a construction program for the offshore oil industry. Aside from constructing OSVs, F.B. Walker pioneered the construction of seismographic vessels to gather data for the oil industry. The quality and research capabilities of these early vessels earned the yard such a favorable reputation that Walker continued building seismographic boats into the 1970s. In 1957, the yard added a new floating drydock, the first of its kind on the Gulf Coast, to accommodate vessels as large as 1,000 tons. It remained the only drydock of its size between New Orleans and Mobile through the late-1960s. By that time, the largest boats built for the oil field were over 150 feet long (Ziglar 1961; F. B. Walker Shipyard Binder n.d.).

In the mid-1950s, Ingalls stepped up efforts to manufacture items for the expanding offshore industry. The company secured contracts to build OSVs, mobile drilling platforms, and offshore oil rigs. For offshore pioneer Kerr-McGee, Ingalls converted shallow-water drill barge Rig 35 for deep-water use, and constructed submersibles, Kermac Rig 44, Kermac Rig 45, and Kermac Rig

46. Ingalls would launch three more submersibles before the decade ended (Ingalls Shipbuilding 1965).

By the 1960s, Ingalls had become the third largest shipyard in the U.S. In 1961, Litton Industries, an electronics and communications conglomerate, purchased Ingalls, eyeing an opportunity to integrate its electronics equipment into Ingalls submarine and oilfield drilling operations. After the buyout, Litton continued building commercial, government, and offshore vessels. Among the latter was the world's largest oil rig, the SEDCO-135 (Offshore 1965; Forbes 1968; Colton n.d.c).

In 1968, Litton expanded the Ingalls yard to meet high demand. Through a unique arrangement, the State of Mississippi helped with financing and Litton began constructing the so-called "Shipyard of the Future," a new, modern facility across the Pascagoula River from the old Ingalls yard. The new yard's defining characteristic was its use of modular construction techniques, which involved simultaneous fabrication and assembly of different vessel sections. With long-time Mississippi Senator John Stennis serving as a ranking majority member of the Senate Armed Services Committee, Ingalls naturally expected assistance in securing Navy contracts. Unsurprisingly, Ingalls quickly received two of the largest Navy contracts ever awarded: one to design and construct a new generation of amphibious assault ship and one to build 30 high-tech destroyers (Offshore 1965; Forbes 1968; Colton n.d.c; Ziglar 1974).

During the 1970s, with the U.S. Navy as Ingalls Shipbuilding's major client, activity at the company was similar to that of the World War II years. Yet, early on, the company suffered internal problems. Assembly-line operations for the new modular method of ship construction proved quite difficult to implement efficiently. Deliveries ran behind schedule, costs escalated, and the yard was plagued by penalties levied on delayed contracts (Business Week 1975). However, by the mid-1970s, Ingalls' management had streamlined operations and improved efficiency, in part, by workforce reductions and eliminating what were deemed to be non-productive units. Before the end of 1975, Ingalls was launching a Navy ship every six weeks. Between 1975 and 1980, Ingalls delivered around 60% of all vessels for the Navy, one ship per month, a peacetime production record (Colton n.d.c).

Residents of Pascagoula remember the Ingalls expansion for having visibly transformed the city. The company had to recruit and train thousands of new employees to meet demand; in 1977, its work force expanded to 25,000. Even during these boom years, however, government delays created slow times between military contracts. As activity slowed further by the end of the 1970s, Ingalls took on a diverse set of projects to keep work on the yard, including constructing bridges, tunnels, and railcars.

During the mid-1970s, the F.B. Walker Shipyard also flourished, and in 1975 its 150 employees could deliver a tugboat every three weeks. Increased contracts for new offshore workboats, tugs, and towboats forced the yard to temporarily stop doing repair work. Although seemingly positioned to remain a fixture in Pascagoula for many years, before the decade's end, financial difficulties forced Walker into bankruptcy and it closed after being in business for nearly 75 years.

The Walker yard soon reemerged under new ownership. Increased demand for Gulf workboats in 1978 prompted Wendell Huddleston and Gayle Robinson of Morgan City to partner with Pascagoula native Travis Short to open Hudson Shipbuilding (or Hudship). Their business plan included expanding the yard with a new side launch capable of handling vessels up to 200 feet. Orders for new tugs, towboats, fishing vessels, and offshore vessels enabled Hudship to quickly employ over 125 workers (F.B. Walker Shipyard Binder 1979).

Just north of Pascagoula, John Dane opened Moss Point Marine on the East Pascagoula River in 1978. The company signed its first major contract in 1981 when recently formed Golden Gulf Marine Operators ordered 12 supply vessels, each measuring 180 feet. The yard quickly emerged as a major builder of offshore vessels and developed a reputation for speed; it delivered 12 vessels in its first year and launched 30 more within two years (Workboat 1981; Workboat 1984).

3.2.3. Downturn of the 1980s

As the 1980s began, Pascagoula shipyard owners were justifiably optimistic. Increased oil prices of the 1970s had prompted a similar increase in Gulf of Mexico offshore oil production, which in turn increased orders for new construction. During this time, shipbuilding in the Moss Point area began to experience resurgence. Halter Marine opened its Moss Point yard in 1980, at the site of Moss Point Marine, and began drawing employees from neighboring yards. The company quickly grew to 500 employees (PP085 2008). James K. Walker Marine constructed several offshore supply boats before returning to its focus on fishing vessels (Colton n.d.b). Sea-Fab started operations in 1982, and constructed an OSV for Edison Chouest Offshore before turning to construction of fishing vessels, pollution control vessels, and towboats (Colton n.d.d).

Meanwhile, Hudson Shipbuilding forged ahead to meet the soaring demand of the oil fields. A series of orders, from such customers as Zapata Marine, Gulf Fleet, Hornbeck Offshore, and Lamnalco Sharja of the United Arab Emirates, focused the company on designing and building offshore supply vessels up to 205 feet. Between May 1981 and December 1982, Hudship delivered no fewer than 14 vessels to Tidewater Marine. The growing list of clients prompted Hudship to expand its east bank yard and add a new yard on the west bank of the Pascagoula River (Colton n.d.d; Hudson Shipbuilders n.d).

In 1981, J.L. Holloway started HAM Marine as a small fabrication company on Industrial Road in Pascagoula, leasing space at the Port of Pascagoula (VP083 2008; PP012 2008). The company built pressure vessels, did piping for Chevron, and got into rig repair. Needing a more reliable arrangement for space, HAM took a long-term lease on part of the old Walker shipyard, which the port had acquired. Deepwater access to the Gulf on the Bayou Casotte Channel's south end and the availability of skilled labor (Ingalls employed over 20,000 people at this time and operated a successful training program) were key attractions for the new company. However, as the oil and gas business slowed during the 1980s, HAM was relegated to sporadic, short-term work, which resulted in frequent but brief cycles of hiring and layoffs.

The oil bust of the mid-1980s dramatically altered the situation for many Gulf Coast shipbuilders. Hudson Shipbuilding, so dependent on a booming oil industry for contracts, began experiencing difficulties. Additional problems included bad publicity, when three of its ships sank in January 1982, and cash shortages. With the commercial building boom coming to an end, Hudship needed to diversify to survive, and the company began making plans to enter the military shipbuilding market by designing fast patrol boats for the Navy and foreign customers. However, while the Navy was testing several of its models, Hudson Shipbuilding went bankrupt (Mississippi Press 1982a; Mississippi Press 1982b; Workboat 1983).

Other Pascagoula yards also disappeared. Walker Marine exited the shipbuilding business in 1985, ending an era of Walker-built ships that spanned eight decades. Krebs Shipyard, Pascagoula's oldest, passed from the scene in 1985 after being severely damaged by Hurricane Elena (Wooden Boat 2009). Moss Point Marine survived for a while by diversifying its customer base and expanding into occasional repair and maintenance work. But, all along the Gulf, small,

privately-owned shipyards faced difficult times. In 1987, Dane sold his operation to Trinity Industries of Dallas, but stayed on as president of Trinity Marine Group. By this time, Trinity had purchased Chicago Bridge and Iron, and formed the Halter Marine Group, operating yards in Moss Point, New Orleans, and Lockport, LA (Colton n.d.e; Colton n.d.f; Workboat 1987).

As noted above, after completing its most successful decade since the 1940s, Ingalls redirected some of its efforts to commercial endeavors. Even as offshore oil construction and commercial shipbuilding crashed at the onset of the 1980s, Ingalls maintained a steady stream of business. The company constructed 13 jackup drilling rigs, four submersible drilling rigs, and a self-unloading cement barge during that period (Colton n.d.c; Global Security 2009). But Ingalls' main customer remained the federal government. In 1982, it delivered the USS *Ticonderoga*, a massive surface missile cruiser equipped with the Aegis radar system, an advanced missile defense system. The construction of *Ticonderoga* reflected Ingalls' engineering and design expertise and ability to incorporate new technology in ship design. The Navy's trust in Ingalls was reflected in contracts to build 19 of the 27 ships in the Aegis program (Colton n.d.c).

Less dependent than many other yards on the oil industry, Ingalls survived the 1980s by downsizing, fulfilling orders for the Navy, and engaging in repair and modernization projects that involved installing vertical launch missile systems on surface ships. Although cuts in military spending caused a national shipbuilding decline and some 70% of U.S. yards closed or were sold in the late-1980s and early-1990s, Ingalls remained an active and reliable shipyard for the Navy. A 1985 Navy contract called for Ingalls to design and construct a new generation of amphibious assault ships, and the yard closed a deal in 1987 to build a new Arleigh Burke class of destroyers. A goal of the U.S. federal government at the time was to maintain warship industrial infrastructure, so construction of the Arleigh Burke and other classes was split fairly evenly between Ingalls and Bath Iron Works in Bath, Maine. Ingalls' modernization and restoration contracts returned to fleet duty the World War II battleships, the USS *Iowa* and the USS *Wisconsin*, and a frigate, the USS *Stark*. Before the decade's end, Ingalls consistently posted annual profits exceeding $100 million and one billion dollars in annual sales. But, by this time, its workforce had declined to around 15,000 employees (Colton n.d.c; McMinnville 1998).

3.2.4. The 1990s to the Present

For some shipyards and fabricators, the lesson of the 1980s was to diversify away from the oilfield. But as oil exploration in the Gulf of Mexico and other parts of the world rebounded in the 1990s, orders increased for new construction of rigs and offshore vessels. In 1997, Trinity completed the spinoff of Halter Marine, the shipyard division, to its shareholders. Halter Marine began expanding, acquiring shipyards, such as McDermott's Three Rivers yard and the Bludworth Bond shipyard, and a steel utility and metals and manufacturing facility. Moving to recapture a significant market share, Halter ventured into drilling rig construction by purchasing TDI, a Texas-based firm involved in repair and conversion of offshore equipment and rigs. Renamed TDI-Halter, the company quickly purchased a minority interest in Houston-based Zentech, Inc., an engineering firm specializing in oil-rig design (Alacra n.d.). Also in 1997, Halter opened a new training center to try to address labor shortages and the industry's upswing (Smith 1998). Two former employees describe the changes Halter underwent in the 2000s:

> It was after 2003 that VT Halter ended up buying all three of the Moss Point yards. All of the yards used to be owned by Freide Goldman. It actually went through a long process. First we were bought by Trinity (not Trinity Yachts) and

> then we went back to the original ownership of Freide Goldman and Halter Marine. It was after the bankruptcy that VT Halter bought us out. From the late-1980s to 1997, we were owned by Trinity Industries. Before that the entire yard was owned by one person, John Dane, who was the original owner of Moss Point Marine. (PP086 2008)
>
> Trinity bought Halter Marine and their various facilities. Then they declared bankruptcy in 2000-2001. VT Halter Marine bought a portion of the assets, namely the three yards. This yard [at Moss Point] was always a Halter Marine facility. MP Marine was a stand-alone yard, not old Halter, it had been acquired after that. The Pascagoula facility had been CB and I [Chicago Bridge and Iron]. It was mothballed when Halter purchased it, then we refurbished it and turned it into a yard (VP090 2008)

The successful construction of world-class, fifth-generation deepwater semisubmersible drilling units proved challenging and costly for TDI-Halter, despite close connections with Noble Drilling and several large U.S. contracts. In Pascagoula, the company managed to complete only one jack-up drilling rig, just before its November 1999 merger with oil rig builder Friede Goldman Ltd. to form Friede Goldman Halter. The merger combined the engineering design and construction expertise of Friede Goldman with the repair and refurbishing expertise of Halter, allowing the company to expand its operations in the Gulf and internationally. After securing a low-interest loan from the Maritime Administration to facilitate rig construction, Friede Goldman Halter completed an 85-acre yard in Pascagoula. But the venture lasted less than three years and the company filed for bankruptcy in April 2001. Even efforts by Mississippi Senators Trent Lott and Thad Cochran to support the U.S. Army Tank and Automotive Command's (TACOM) decision to award the company's Halter Marine unit an order potentially worth $78 million (Business Wire Editors 2001) could not change the course of events. In 2002, Singapore Technologies Engineering, Singapore's largest defense contractor, purchased six Halter yards and created a subsidiary, VT Halter Marine, headquartered in Pascagoula. VT Halter abandoned rig construction to refocus on building a variety of other vessels. It currently operates yards in Pascagoula, Moss Point, and Escatawpa (Colton n.d.e). In 2003, the remaining assets of Halter Marine Offshore were acquired by Signal International, the only Pascagoula yard currently involved in oil-rig construction (Mississippi Business Journal 2003).

Ingalls entered the 1990s with several scheduled deliveries for the Navy, but the national decline in defense-related contracts prompted Ingalls to reduce its workforce and turn toward the commercial market (Global Security 2009). In the late-1990s, Ingalls invested $25 million to upgrade facilities to compete for offshore oil industry-related contracts. It quickly secured a $130 million contract from Edison Chouest Offshore, Inc., a major offshore vessel service company based in Galliano, Louisiana. It was the first of several contracts to build workboats for oil industry operations. Chouest ordered 31 supply boats ranging from 191 to 244 feet, because both of its company-owned shipyards in Larose and Houma were at full capacity (The Times-Picayune 1997).

Problems arose almost immediately. Barely a month after the agreement, Ingalls demanded additional time and money to alter what it considered poor ship designs provided by Chouest. A series of delays and cost overruns followed. Although quite normal for government contracts, delays and cost overruns are generally not tolerated in commercial shipbuilding. Ultimately,

Chouest cancelled the contract after delivery of only 14 of the 31 vessels. Laney Chouest, a company executive, publicly criticized Ingalls declaring, "We will never build another ship at Ingalls." Other shipyards, Mr. Chouest noted, built similarly-designed ships without delays or cost overruns. He also questioned the quality of Ingalls-constructed ships, because the 14 supply boats had improperly cut steel plates that left gaps requiring several welds to seal. The extra welds compromised the integrity of the surrounding steel, making it more susceptible to rust, cracks, and deterioration (The Times-Picayune 2000).

Ingalls experienced additional problems with its attempted expansion into the offshore industry. Cost overruns and delays forced Ingalls to cancel a 1998 contract to build two cruise ships (The Times-Picayune 2002). A drillship for Transocean Offshore was completed eight months behind schedule. When Searex Inc. of Mandeville, Louisiana, awarded Ingalls a $30 million contract to build four offshore jack-up vessels, Coast Guard inspectors detected problems with Ingalls' designs, which caused delays and cost overruns. For the first vessel, delivered six months late, design and engineering costs for electrical and piping systems jumped from $70,000 to $420,000. Searex, which missed several opportunities to use the vessel, attempted to cancel the contract. Facing mounting debt, Searex filed for bankruptcy in January 2000 (The Times-Picayune 2002).

In 2001, the Northrop Grumman Corporation, an aerospace and defense industry enterprise, acquired the Ingalls and Avondale shipyards by purchasing Litton Industries. The following year, Northrop Grumman announced that it would merge the two operations in Northrop Grumman Ship Systems, making it by far the maritime defense industry's largest shipbuilder (The Times-Picayune 2002). Soon afterward, Northrop Grumman Ship Systems added Newport News Shipbuilding in Virginia to become Northrop Grumman Shipbuilding. Despite its difficulties in the commercial market, Northrop Grumman Shipbuilding's Ingalls Operations remained one of the six major shipyards in the US and one of the Navy's primary builders of cruisers, destroyers, and battleships. The company then started building for the Coast Guard.

Hurricane Katrina in 2005 caused huge storm surge that inundated nearly 95% of Pascagoula. The city's fabrication shops and shipyards were heavily damaged and its workforce scattered across the country. But massive federal and state assistance led to an enormous rebuilding effort. Gulf Opportunity Zone (GO Zone) tax incentives attracted new businesses, labor, and opportunities (see Chapter 5, Volume III). Casinos returned to nearby Biloxi, and Mississippi launched a concerted effort to promote the industrialization of its coastal communities. Developers began creating residential and industrial communities that combine research, corporate, and government interests. In contrast to the area's larger shipyards, which generally resumed operations quickly after the hurricane, smaller yards and shops sometimes suffered long-lasting impacts, with a few forced to shut down after Katrina. The post-Katrina loss of a substantial portion of its traditional labor force to migration and new work opportunities also posed longer term difficulties for the shipbuilding industry.

3.3. Fabrication and Shipbuilding in the Context of Other Occupations and Industries

For almost 100 years, in Pascagoula, the shipbuilding and fabrication industry has been central to residents' self-images and livelihoods. In Moss Point, the industry occupied a more peripheral role until the last few decades, when many existing local yards and shops started operations. Relative to Pascagoula, there is a much less obvious connection between local identity and the shipbuilding and fabrication industry.

The industry experienced a surge in activity in both Moss Point and Pascagoula in the 1990s, but the downturn of the late-1990s and early-2000s, followed by the hurricanes of 2005, took a toll. The area's yards and shops recovered their physical infrastructure and, during the fieldwork for this study, almost unanimously reported high levels of business, though workforce acquisition was still a concern. Competing employers include the Chevron refinery, service industries, and government agencies that draw workers from of the region. The potential opening of several new industries in the area in the coming years heightened the need to understand shipbuilding and fabrication within a complex network of economic and political relationships.

At the same time, other significant industries have shrunk or disappeared. The shrimping and fishing industries have declined in recent years, and much of the necessary infrastructure is either gone or has not been converted to other uses. Hurricane Katrina negatively affected the area's aquatic ecosystems and fishing infrastructure. For example, the fish populations in the Pascagoula River were slow to recover from the hurricane and fish processing plants in the area were severely damaged (Perez 2007). Plans to redevelop Pascagoula's waterfront areas, where substantial improvements had been made before the hurricanes, received renewed attention afterward (Crocker 2007a). Although some observers warned about the end of commercial fishing in the area, commercial landings at Pascagoula-Moss Point and Gulfport-Biloxi rebounded (Table 3.1). The Omega Protein fish processing plant in Moss Point also continues to be a large operation, employing around 1,000 workers.

Table 3.1

Commercial Fishery Landings and Value in Southern Mississippi

Year	Pascagoula-Moss Point		Gulfport-Biloxi	
	Quantity (million pounds)	Value (million dollars)*	Quantity (million pounds)	Value (million dollars)*
2010	105.2	8.9	6.0	13.0
2009	217.4	18.6	12.9	19.3
2008	190.2**	19.2	24.5	18.6
2007	216.3**	21.3	11.7	18.6
2006	212.1	8.8	9.6	12.8
2005	159.1	na	na	15.3
2004	162.8	na	16.3	26.2
2003	192.0	13.8	17.4	26.8
2002	198.5	13.9	14.8	26.9
2001	196.0	16.3	14.6	29.1
2000	199.9	16.5	14.2	35.5
1999	250.5	16.0	13.4	27.9
1998	193.2	13.8	14.1	30.1

*Note that value varies by species, so there is no direct correlation between quantity and value.
**Pascagoula-Moss Point was in the top ten U.S. ports in landings in these years.
Source: National Marine Fisheries Service (NMFS) n.d.

Pascagoula was the site of Naval Station Pascagoula from 1992 to 2006. The homeport was built on Singing River Island, a human-made island built from dredge spoils. The main base was formally transferred to the State of Mississippi in July 2007 and housing transferred to the Department of the Air Force in December 2008. Disposal and environmental actions related to

closure slated for completion in September 2011; negotiations about its future use were ongoing during the study period.

The booming U.S. natural gas market led to a flurry of activity in the region (see also Section 3.4.3. below). In 2008, Mississippi Gasification, a synthetic natural gas plant, leased property in the Moss Point Industrial and Technology Complex and was expected to generate 177 new full-time jobs. The project secured $300 million in GO Zone bond financing as well as millions of dollars in federal loan guarantees, and received a positive federal environmental impact evaluation (Havens 2009a). However, due to changes in the natural gas market in the US, the project had been put on hold by the end of 2011 (Murtaugh 2011).

3.4. INFLUENCE OF THE INDUSTRY ON THE PHYSICAL FEATURES OF THE REGION

Jackson County's shipbuilders and fabricators have influenced the entire region's physical layout and infrastructure. The National Land Cover Database (NLCD, completed in 2001) classifies land use types for the entire US. Figure 3.4 shows the distribution of land use types in the region, using this classification. The map shows a mix of residential and commercial zones in Jackson County, and a high concentration of industrial and heavy commercial zones throughout the region, including where industries described in this chapter are located.

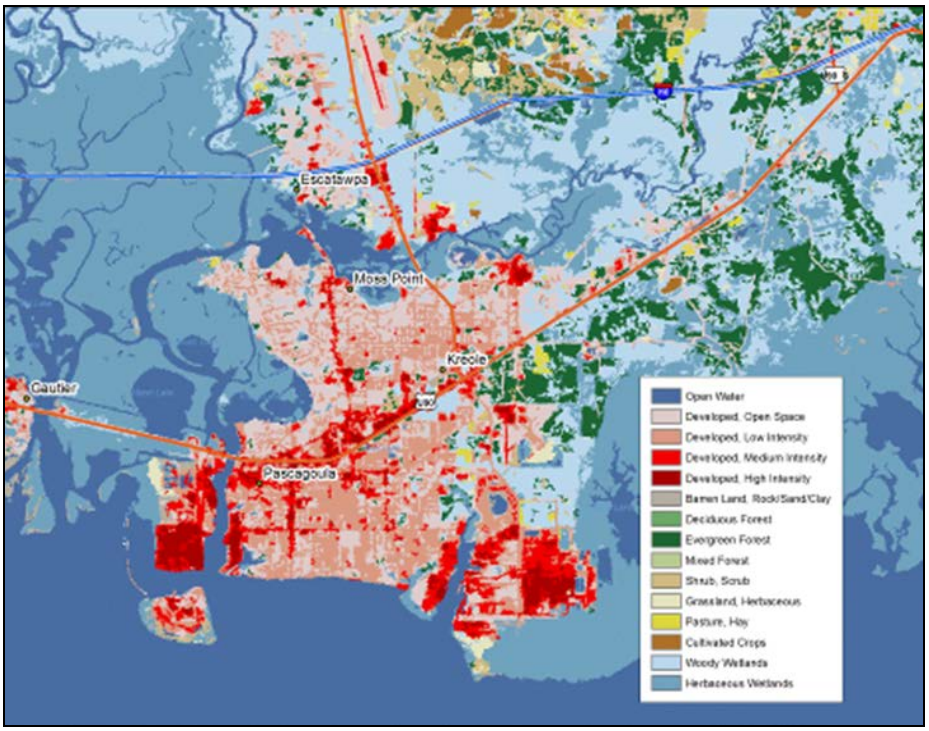

Figure 3.4. Land Use Classifications from the 2001 National Land Cover Dataset.

Source: Multi-Resolution Land Characteristics Consortium 2001.

In Pascagoula, industrial activity takes place primarily to the east and west of town, along Bayou Casotte and the Pascagoula River. State Route 90 bisects the town from north to south; downtown Pascagoula lies immediately west of a large retail area on the highway. Signs of the shipbuilding and fabrication industry are most evident in sections of town close to the water,

whereas, in most other areas, only the occasional roadside advertisement for jobs and training discloses the industry's presence. The Ingalls yard and several other maritime-related businesses are located on the western side of the Pascagoula River, including the Port of Pascagoula, one of the local Signal International shipyards, and Colle Towing.

To the east of town, fabrication shops, shipyards and the Chevron refinery are located in an industrial zone separate from residential or commercial areas. Highway 63/Industrial Road runs through this zone and provides easy access to most businesses there. However, some businesses further away from the main road must be accessed by side streets. The Bayou Casotte Industrial Park houses two shipyards, Signal International and V.T. Halter Marine, and other firms, such as the Rolls Royce Propeller Center, Mississippi Phosphates Corporation, Bird-Johnson Company, and Amoco Production Company. Although this industrial park occupies county property outside the Pascagoula city limits, it is part of the Pascagoula School District and generates revenue for it.

Downtown Moss Point, at the confluence of the Pascagoula and Escatawpa rivers, is less than a mile and a half from the Gulf of Mexico's open waters. There are no large shopping areas in Moss Point, which is a less industrial and quieter place than Pascagoula. Industrial development is clustered in several areas that are not readily visible from other sections of town. Moss Point is linked to Pascagoula by I-63/Industrial Road and I-63 and by I-613, which runs through downtown Moss Point, and both highways eventually lead north to Escatawpa. VT Halter Moss Point and VT Halter Escatawpa, the two largest yards in Moss Point, are close to the northern side of Beardslee Lake, near I-613 and I-63, with the lake clearly visible from the highway. The local fish processing plant and its shipyard are nearby. Several fabrication shops of small to medium-size stand alongside other industrial and commercial businesses and a few restaurants in an older, predominantly residential zone of East Moss Point, near the intersection of I-90 and I-63. North on I-63, just before the bridge that crosses the Escatawpa River, is the site of what used to be International Paper Mill, which, after serving for some time as a parking lot for the Chevron refinery, became the Moss Point Industrial and Technology Complex. Mississippi Gasification has leased the complex to build a plant that would convert petroleum coke into synthetic natural gas. Scoping for the environmental impact statement began at the end of 2009 (Havens 2009b), though the plans have since been put on hold.

3.4.1. Waterways, Roadways, and Airports

Pascagoula is attractive to fabrication shops and shipyards because of its easy access to deep water. The Pascagoula River is 32 feet deep. Bayou Casotte, which was dredged in the late-1950s and then deepened in the following decades for Chevron and Friede Goldman, is now maintained at 42 feet. The Port Authority oversees all the channels in the area. A large natural hole near the west bank of the Pascagoula River provides necessary depth for testing rigs and vessels.

Local residents attribute much of the area's infrastructure to the presence of shipyards. When new yards first opened on the west bank of the Pascagoula River in the 1970s, the existing bridges and roadways were insufficient to handle the traffic of workers as well as materials going to and from the yards. The drawbridge that was once the only link between Pascagoula and Gautier was rebuilt as a high-rise bridge that allows passage of cars and boats at the same time. Similar efforts were made to raise the height of other area bridges in response to the difficulties shipyards had moving large vessels (PP010 2008). The height of water traffic remains limited by the height of the railroad bridge, just to the south of the main bridge.

In addition to the extensive network of waterways, southeast Jackson County is served by ground, rail, and air transportation. Pascagoula and Gautier are located about five miles south of Interstate 10, which connects the region to population centers to the east and west. Many out-of-town workers are housed in motels along I-10 and the major highways crisscrossing the region.

The railroad runs just south of Highway 90. Although historically there was rail passenger service from Pascagoula to New Orleans, Mobile, and points beyond, today the railroad is dedicated to freight. Public transportation in and out of the area is limited; there is a Greyhound bus stop located in Pascagoula, but it only serves select routes, and the nearest bus stations are in Biloxi or Mobile. The area is also served by three airports, commercial airports located in Gulfport and Mobile, and the public use Trent Lott International Airport, owned by the Jackson County Airport Authority and located in Moss Point, Mississippi.

3.4.2. Housing, Commuting, and Traffic

Housing is an ongoing concern for southeast Jackson County. Both Pascagoula and Moss Point lacked sufficient housing 2007-2009, a lingering problem, many study participants argued, created by the 2005 hurricanes. With much of the housing stock damaged and a large influx of non-local workers, both housing prices and hotel rates rose in response to demand. Figure 3.5 shows homeownership as a percentage of the total homes for southeast Jackson County. As shown, homeownership is lowest in and immediately adjacent to the City of Pascagoula.

Figure 3.5. Housing occupancy: Homeowners.

Source: U.S. Bureau 2000 Summary File 1; U.S. Census Bureau 2010 Summary File 1.

In 1970, the majority of the housing units (21,500 or 76.3%) in the Pascagoula MSA were owner-occupied, while 6,660 units (24.2%) were renter-occupied (see Appendix F). Housing was generally affordable in the Pascagoula MSA prior to the storms, though there had been a substantial jump in relative rental costs between 1970, when the real gross median rent was $453 per month, and 2007, when it was $686 (see Appendix F). Like the gross median rent, the real

median home value for the Pascagoula MSA increased substantially in the 1970s and in the 1980s, before increasing again during the 1990s and from 2000-2007 (see Appendix F). Even before the 2005 storms, housing was not easily obtainable in the Pascagoula MSA; in 2000, only 6.8% of the housing units were vacant (see Appendix F).

The type and location of housing affect the distribution of the region's workforce. Commuting to the area's shipyards has a long history, starting in the 1950s when people from neighboring counties would stay in Pascagoula during weekdays and return home on the weekends. Throughout the 1990s, workers who commuted to local yards and fabrication shops came primarily from Mobile, Biloxi-Gulfport, and George County (PP012 2008). Many workers still commute to area fabrication yards and shipyards or to work in other industries (see Table 3.2 and Appendix F). Heavy traffic jams along I-10 correlate with the start and end times of shifts at Northrop Grumman, the Chevron Refinery, and other large local employers. However, despite the aggravation of traffic during peak hours, the area's older shipyard workers agreed that traffic and commuting problems had been far worse in the past, when the Ingalls Shipyard employed considerably more people than Northrop Grumman had on payroll at the time of this study.

Table 3.2

Work Commuting Patterns by Decade for Jackson County[6]

	1970	1980	1990	2000
Staying	23554	38753	38119	40990
Entering	5055	7925	8245	11613
Leaving	4050	8567	10427	16396

Source: U.S. Census Bureau, Journey to Work and Place of Work Data.

3.4.3. Recent Developments at the Port of Pascagoula

The Port of Pascagoula was expected to play a major role in the expansion of U.S. capacity to receive, regasify, and deliver liquefied natural gas (LNG).[7] Gulf LNG Energy, a company owned by El Paso Corporation and Crest Investments out of Houston and Sonango out of Angola, leased property at the port and was expected to create 50-60 permanent jobs in the area (Havens 2008). The $1.1 billion terminal officially opened on October 28, 2011 (Ward 2011). At the time of this study, in the United States, 18 such facilities had been built (two); approved by the Federal Energy Regulatory Commission for onshore construction (14); jointly approved for offshore construction by the Maritime Administration (MARAD) and the Coast Guard (one); or proposed to either FERC or MARAD/Coast Guard (one). A small number of other proposals had

[6] Staying is defined as residents of Jackson County working Jackson County; entering is defined as non-Jackson County residents working in Jackson County; and leaving is defined as Jackson County residents working outside the County.

[7] Several of the facilities were proposed for the Pascagoula area. In addition, facilities were on the drawing board for the central Coastal Bend, Port Arthur (and Sabine Pass), South Louisiana (e.g., the Main Pass proposal by McMoRan), and the Bienville Offshore Energy Terminal south of Mobile. Two of the U.S.'s five existing LNG facilities are in Louisiana: Lake Charles and Excelerate Energy's Gulf Gateway Energy Bridge, a dynamic positioning ship 117 miles off the coast, which received LNG from other ships, regasifies it on-site, and delivers it ashore through pipelines.

been withdrawn after local opposition. Many of the other 20 or so facilities proposed outside the Gulf of Mexico region in the continental US had been rejected by, or face continued opposition from, local and regional citizens and officials (see Appendix B). Thus, as the energy companies proceed with LNG plans and proposals, the Gulf of Mexico will experience the bulk of the impacts of these activities.

Additional proposals for the southern end of Bayou Casotte included a U.S. Department of Energy (DOE) proposal to expand its strategic oil reserves by hollowing out an underground salt dome near Richmond, Mississippi and using it to store unrefined crude oil. Approximately 10 permanent jobs would be generated by this facility. At its April 10, 2008 public hearing in Pascagoula, locals and individuals from the greater region came to learn more about the project and voice their opposition; as of November 2008, the DOE announced that it was reconsidering its plan (Kirgan 2008). As of 2011, strategic oil reserves in Louisiana were being reevaluated after seismic research showed that one such salt dome was losing its integrity (Dlouhy 2011).

3.4.4. Economic and Industrial Development

Jackson County public officials have sought to promote sustainable economic and industrial development for more than a decade. In 2000, the Jackson County Board of Supervisors launched an organized effort to attract new industry, while supporting the evolution of older industries. The county is one of the few in the state to offer tax exemptions to industrial companies starting up, moving into the area, or making significant capital investments that lead to job creation. Since 2006, Jackson County has attempted to diversify into aerospace and other high technology industries to create a broader and more technologically advanced economic base. The Jackson County Economic Development Foundation has spearheaded projects motivated by the dual need to halt the loss of local industries and keep remaining industries competitive in the global economy (Jackson County n.d.). One example is the county's emergence as a center for aerospace research, development, and production, a process more broadly related to the establishment of an aerospace corridor from southern Alabama to New Orleans. Jackson County already has employers in the aerospace industry, namely Northrop Grumman's Integrated Systems Center in Moss Point, which constructs unmanned surveillance aircraft.

Some in Moss Point have attempted to shift its focus from manufacturing and industry to ecotourism. In 2007 the City Board of Aldermen voted to christen Moss Point "The River City" and to adopt the slogan, "Becoming a World Class River City." These initiatives capitalize on Moss Point's proximity to the Pascagoula River, the largest undammed river system in the contiguous 48 states, and aim to reinvent the city as an ecotourist destination featuring animal watching, hunting, fishing, boating, and other outdoor activities. It remains to be seen whether ecotourism will succeed. Some study participants applauded efforts to reinvent the community, but expressed doubts about the abilities of the area's natural resources or social activities to attract tourists.

In 2009, Moss Point applied for and won the designation "Main Street City," the only city in Mississippi so recognized that year. Official recognition aside, some government, business, and community leaders think that the designation has the potential to garner long-sought money from the state government for the economic revitalization and city restructuring. Chief among the Main Street City application's initiatives were restructuring of the downtown area and the "development efforts based on sound research and planning principals that have not been utilized within our City in many years" (Mississippi Main 2008). The application also emphasized the

need to increase levels of commitment among all community members to ongoing revitalization of the city. Concordantly, the application underscores the importance of greater community support for local businesses, in order to make revitalization sustainable. One of the main challenges facing Moss Point, the application acknowledged, is to overcome "perceptions by the outside communities that there is a crime problem, when in fact there is no more [crime in Moss Point] than surrounding areas" (Mississippi Main 2008). Fieldworkers indeed detected this perception during a number of their interactions.

Despite this drive for diversification and ongoing efforts to achieve it, the local economy continues to focus primarily on manufacturing and heavy industry, headed by the shipbuilding and fabrication industry and the petrochemical industry. Given this economic focus, one of the major barriers to job growth is a lack of adequately trained local workers. Jackson County developers have emphasized job growth as opposed to concerns about the quality of life or related issues. Recent efforts in Moss Point to introduce ecotourism into the economy may have implications for local job growth as well as quality of life. Yet, as of 2009, ecotourism has had neither wide visibility nor broad support in the community.

3.5. INFLUENCE OF THE INDUSTRY ON THE POPULATION OF THE REGION

The influence of the shipbuilding and fabrication industry on the population of southeast Jackson County is less immediately obvious than its influence on the physical features of the region. Nevertheless, its influence is discernible from both qualitative and quantitative data. Population growth and decline, the creation and maintenance of workforce development and training programs, and local social networks are all affected, at least in part, by the industry's presence.

In the Pascagoula-Moss Point MSA, shipbuilding employment peaked in 1991 and was in gradual decline until 2000 (see Appendix F, pp. 24-28). No data were reported after 2000, due to the consolidation of certain firms in the industry and their privacy concerns. During this period of relative decline in employment, however, both nominal and real incomes were relatively stable.

In the manufacturing sector overall, employment peaked in the 1970s, coinciding with a peak in local shipyard employment, but, since then, there has been a gradual, long-term decline, despite a brief recovery period in the early-1990s (see Appendix F, pp. 28-31). By 2006, employment in the broader manufacturing sector was half of the 1970s peak, considered as a percentage of total private employment. When viewed from the perspective of the absolute number of workers employed, manufacturing employment was just slightly below the total numbers from the 1970s. The employment data indicates a decisive shift in employment towards the service sector, a transition mirrored across many study areas in this report.

Overall nominal wages increased dramatically during 1970-2005 and nominal wages per job also increased dramatically.[8] However, upon closer inspection of real wage trends, although real wages increased over the period, their upward movement was not as substantial as the change in nominal wages. Furthermore, on a per job basis, real average earnings increased quite modestly compared to the nominal wage increase per job and the total increase in personal income (see Appendix F).

[8] Nominal wages are the wages paid in current dollars unadjusted for inflation, whereas real wages are wages measured in constant dollars adjusted for the effects of inflation. Inflation is typically defined as a rise in the general price level of a typical market basket of goods and services.

Comparative analysis of statistics for the Pascagoula-Moss Point MSA during 1970-2005 reveals that oil and natural gas prices were only weakly correlated with average wages. However, this may be the result of cost of living adjustments in wage contracts. The most interesting evidence from the finite distributed lag model estimation was the impact of a change in manufacturing employment on the unemployment transfers for the MSA. This evidence suggests that the manufacturing component, which includes shipbuilding and manufacturing, still comprises a significant portion of the MSA's economic profile.

3.5.1. General Population Dynamics

Population changes in Jackson County from 1970 to 2007 are shown in Figure 3.6 and Figure 3.7 (also see Appendix F).

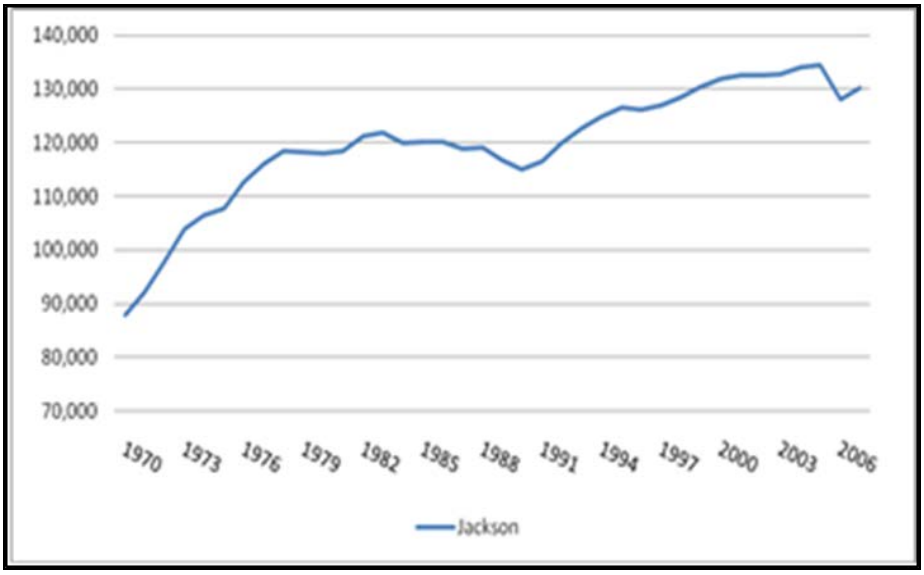

Figure 3.6. Population changes in Jackson County from 1970 to 2007.

Source: U.S. Census Bureau, Population Estimates, County.

As of 2007, Mississippi's median income was $36,424, whereas Jackson County's was $43,411, a difference of about $7,000 (see Appendix F). From 1989 to 2007, the total number and proportion of people living below the poverty line decreased in the State of Mississippi. However, the same cannot be said for Jackson County (see Appendix F).

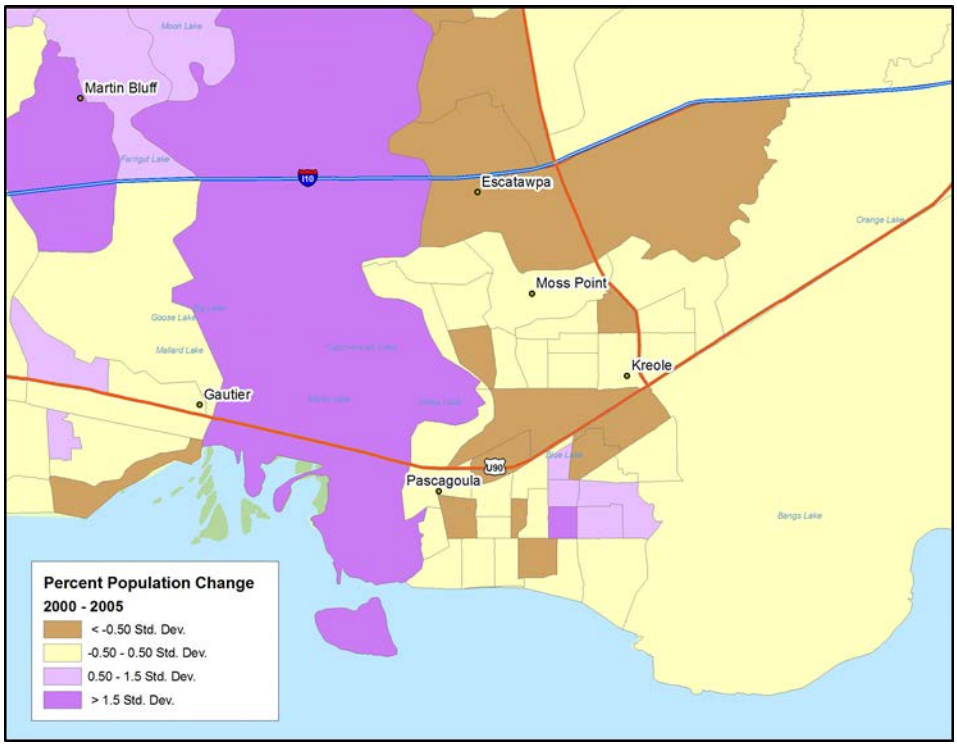

Figure 3.7. Percent population change southeast Jackson County-Census 2000 to Census 2005.

Source: U.S. Bureau 2000 Summary File 1; U.S. Census Bureau 2010 Summary File 1.

3.5.2. Workforce Development and Trends

In general, Jackson County has a robust workforce. The estimated working-age male population grew from 21,017 in 1970 to 34,605 in 2007, peaking at 36,721 in 1999 (see Appendix F). The number of employed people peaked in 1999 at 67,990, though employment growth was stronger from 2000-2007 than the 1990s. The total number unemployed and the unemployment rate peaked at 10.1% in 2005 (see Figure 3.8 and Appendix F).

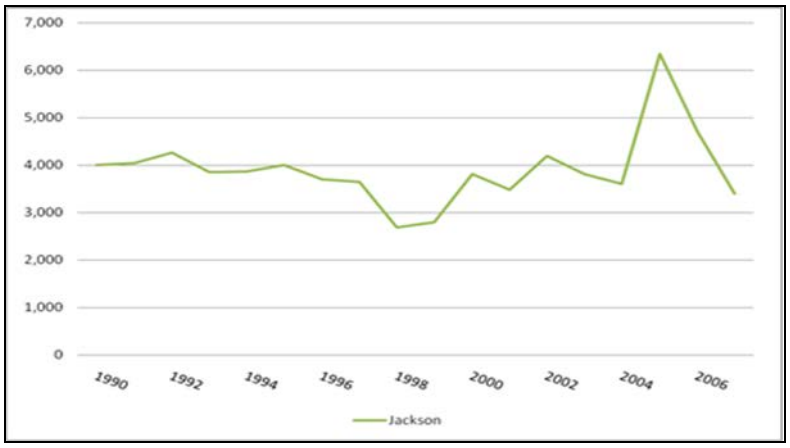

Figure 3.8. Total number unemployed in Jackson County.

Source: U.S. Department of Labor, Bureau of Labor Statistics, Local Area Unemployment Statistics.

3.5.2.1. The Shipbuilding and Fabrication Workforce

Companies in the shipbuilding and fabrication industry employ workers to fill all of the positions described in Chapter 1 of this volume. Although manufacturing accounted for only 37% of total non-farm employment by 2007, it remains an important economic force (see Appendix F). Once, the industry employed the majority of the area's workers, but it lost the distinction of being the largest source of non-farm employment in 1992. Employment in the retail and service sectors has increased considerably since 1992. Although manufacturing employment has decreased, manufacturing income has increased over the same period (see Appendix F). Shipbuilding and fabrication workers, specifically, saw wage increases in the 1990s, but annual average shipbuilding wages trailed the median wage for the rest of the county, and the wages were not competitive. Thus, while manufacturing remains central to southeast Jackson County and surrounding areas, the local economy appears to be shifting away from this sector towards retail and service.

3.5.2.2. Alternatives for Skilled Workers

Shipbuilding is the single largest source of employment in southeast Jackson County. Northrop Grumman employed 12,000 people during 2007, making it the area's and the state's largest employer. Signal International and VT Halter, were far smaller than Northrop Grumman with 1,500 and 1,154 total workers, respectively (Mississippi Development Authority 2009). Despite the shipbuilding and fabrication industry's size, it still competes for labor with other employers. For residents of some communities, shipbuilding and fabrication has assumed negative connotations over the years. Many local workers left or stayed out of shipbuilding and fabrication to avoid the periodic layoffs and downsizing associated with the industry's business cycles, or work conditions that they perceived to be unsafe or dirty.

One potential option outside of the shipbuilding and fabrication industry for local workers is the Chevron refinery, which employs around 1,500 workers (Mississippi Development 2009). Chevron has a reputation among area employers and workers as a source of steady, high-paying work. During periodic turnarounds, the Chevron refinery expands its workforce and hires individuals with many of the same skills as those who work in the fabrication and shipyards.

Some study participants described how they and others used the shipyards to obtain training, but stayed only long enough to gain the experience necessary to move into another industry. Yet, other study participants preferred to remain in the fabrication and shipbuilding industry due to family ties to the industry or the continually changing nature of shipyard work.

Historically, the Moss Point Paper Mill was considered a desirable employer because it provided stable jobs, but throughout the late-1990s and early-2000s, the paper mill decreased its scale of operations and eventually closed in 2001. Even at the time of its closing, when its operations had declined significantly, the paper mill employed around 375 workers, a substantial portion of whom resided in Moss Point and other nearby areas (International Paper 2008). However, study participants frequently noted, the skills required in the paper mill and those needed in the shipyards were considerably different.

Area residents also work in the offshore petroleum industry, citing high pay, good benefits, and attention to safety as the main reasons. On the other hand, some residents argued that the seven and seven or 14 and 14 schedules (numbers of days on and days off) common in that industry kept them from working there.

Industrial construction is another common local line of work. People engaged in this industry commented favorably on its working conditions and wages compared to shipbuilding and fabrication.

3.5.2.3. Finding Out About Work

According to study participants, word of mouth is the most common way to find out about job opportunities. Workers share news about companies that are hiring, as well as going wages and benefits. Likewise, employers communicate about the availability of workers with different skills. Shipyards and fabrication shops are places where employees find out about work opportunities from fellow workers. Labor contractors noted that their employees would readily discuss wages and benefits with other workers on each job. In addition, vocational training programs create opportunities for trainees to learn about jobs from instructors, as well as from workers, who, already working in the industry, enroll to upgrade their skills or learn new ones. Local bars and restaurants that are consistently frequented by workers in shipbuilding and fabrication and other local industries often serve as settings for information sharing and job recruitment. Research team fieldworkers often observed workers in uniform at certain local establishments, a practice that assisted job-seekers as well as prospective employers to meet their needs. Finally, family networks played significant roles in job acquisition. Many industry workers reported landing positions based on direct endorsements from family members and relatives or information gleaned through family networks. (For more information about social networks, see Appendix F.)

News of employment opportunities also travels by modes of communication other than word of mouth and social networks. Job openings are listed in local newspapers, on company websites and in their newsletters. Job information is available as well at Workforce Investment Network (WIN) Centers. Public advertising was used only by the area's largest shipbuilding and fabrication yards, and, at Northrop Grumman, unions refer members for positions. Local temporary employment agencies also help workers find out about and acquire jobs. Yards and shops of all sizes also reported making use of social networks, by contacting current and former workers when an upsurge in work or a sudden shortage of workers occurred.

3.5.2.4. Establishing and Maintaining a Workforce

Some shipbuilding and fabrication industry workers choose jobs in large shipyards, while others gravitate toward smaller companies or yards. The latter cite relative freedom, lack of constant supervision, and the variability of work (as opposed to single-task drudgery) as the main reasons for their decisions. The smaller fabrication shops, most located in Moss Point, differ from the larger shipyards in terms of the types of work done, labor atmosphere, and connections between management and workers. Although the shops often did work for larger shipyards, owners were quick to point out that they engaged in a diverse range of work outside of the shipbuilding sector and often outside of the local area. This variability, some owners reported, helped a small shop to maintain a relatively stable workforce (also see Chapter 4, Volume III).

As indicated in the previous section, Northrop Grumman stands out among yards in the study area, because it is the only one with a unionized workforce. The yard has been unionized since it was founded as Ingalls Shipbuilding in 1938. The unions coordinate with the company to run training programs, advertise job openings, and recruit workers. Union representatives travel to local schools and job or trade fairs to promote the shipbuilding industry. The shipyard currently operates a high school-to-apprenticeship program, which began in 1952 as an electrical training program and expanded in 1954 to include the metal trades. The program enables aspiring craftsmen to finish the coursework portion of the program while still in high school and transition to on-the-job training immediately afterward. As of spring 2008, the apprenticeship program had around 700 participants in 13 crafts, and there were plans to expand the program to 1000 students (VP077 2008). The age profile of program participants has varied over time, and now includes participants from more diverse age ranges. The program aims to include 13% female students, but does not always meet this goal, and many women who enroll drop out before graduation. The number of women also varies considerably by craft. Union and company officials generally agree that overall retention in the apprenticeship program is a problem, and they also agree that the majority of apprentices who do not complete the program are terminated due to poor attendance (VP098 2008; VP055 2008). Ongoing efforts to rectify this situation have not been entirely successful. Other Northrop Grumman training options include a coop-program, where employees work while studying engineering in school, and a design training program.

Signal International and VT Halter also offer in-house training facilities staffed by employees and available to all current non-contract workers. Although on-the-job training remains an important aspect of fabrication and shipyard work, specific training programs have been designed to focus on a particular craft or set of skills. However, some industry observers and educators question whether the narrow focus inhibits the development of well-rounded employees. None of the smaller fabrication shops in Jackson County offered formal in-house training.

The training programs of the large yards, particularly Ingalls, have been credited with training a substantial number of skilled workers on the Gulf Coast. Historically, high turnover among workers presents particular problems and has discouraged some employers from investing in in-house training programs. Jackson County does not have a community sponsored training program for local labor, as do some other Gulf Coast communities.

Recruiting young workers has proved a special challenge in recent years; both companies and trade unions participate in on-campus and off-campus programs, such as career fairs and classroom visits, aimed at increasing understanding of, and interest in, the industry among the students (Crocker 2007b). These programs are seen as providing an alternative to “everyone must go to college” advice that is prevalent in the high schools.

Local educational institutions have addressed the needs of the shipyards since their inception. The Mississippi Gulf Coast Community College (MGCCC), which currently trains between 10,000 and 12,000 workers a year through a partnership with Northrop Grumman, opened in 1965 as the Jackson County Campus of the Mississippi Gulf Coast Junior College. Residents linked its arrival to the expansion of activities in the shipyards (PP008 2008; PP010 2008). Over the years, MGCCC has offered various programs, ranging from single classes focusing on a particular welding method to broader three-year and four-year programs. Several companies operate training programs in partnership with the MGCCC and other local training institutes. Companies also donate instructional materials to the schools to support particular courses. At one time, when the Ingalls yard was under Litton ownership, the company supplied teachers to the local schools on a temporary basis. The Mississippi Gulf Coast Advanced Manufacturing and Technology Center, in Gulfport, was established to teach industrial, career, and technical skills, provide professional training, and demonstrate cooperation between education and business in Mississippi.

In 1976, the Applied Technology Center (ATC), opened as the Pascagoula Vocational Technical Center, offers a state approved curriculum in 16 programs for high school students. Around 500 students were enrolled in ATC programs for the 2008-2009 academic year, and officials expected the number to rise during the coming years in keeping with population growth. Although the shipyard-related courses attract males for the most part, the number of women has risen recently and, in the spring of 2009, women accounted for approximately 10% of the students (VP128 2009). Attracting and keeping teachers are two challenges that the center's administrators face. The ATC cannot offer wages that are competitive with local industry, so periods of high demand draw away skilled instructors.

Despite these efforts by local yards, shops, and educational institutions, some study participants argued that attitudes toward skilled labor have grown more negative as opportunities to remain in school have increased (BS005 2007, SB007 2007, RC032 2008). The proportion of people in the study area without high school diplomas decreased from 46.9% in 1970 to 17.4% in 2007, while the proportion holding college or postgraduate degrees increased from 8.4% to 17.4% in 2007 (see Appendix F).

Instructional technology has become a source of pride for the Moss Point School District in recent years. As markers of the school system's technological advancement, one administrator cited use of a teaching website for students who are at home sick, promethean boards, and the availability of computers purchased with a Cisco grant (SB024 2008). However, although the school district appears to be meeting goals regarding sophisticated technology outlined on its official website, there is still substantial concern about facilities and materials. The Moss Point School District Career and Technical Center, for example, is some 30 years old and in poor condition. Funding cuts associated with Hurricane Katrina's damage to parts of Moss Point's industrial base and the population decline after the hurricane contributed to many of the educational challenges. The school district might possess considerable numbers of computers and other high-tech equipment, but it also contends with shortages of more basic materials, as indicated by articles on the school district website describing donated items. Discussions with study participants revealed how heavily the district depends on donations from local industry, particularly the shipyards, to continue offering technical courses (VP035 2008; VP037 2008). Industry and district officials understand this as a fair trade, because graduates of these courses are prepared to work at the shipyards. Nevertheless, as previously mentioned, instructors noted that many students viewed work in other industries more favorably than work in the shipyards.

3.5.2.5. Temporary Workers

During several historical periods, shipyards and fabrication shops have attempted to recruit workers outside southeast Jackson County. This was the case after Hurricane Katrina, when labor needs were particularly high. Several local companies turned to labor contractors. One company official noted that he had worked with nine contractors to get the workers he needed and, when his company joined the federal H-2B visa program, sent a company manager overseas to recruit workers (VP083 2008). Although one employer became involved in a protracted dispute with H-2B workers, and several companies that applied for visas were denied, a few companies continued to hire workers on H-2B visas through 2008 (see also Chapter 2, Volume III).

Since 2006, a significant number of international immigrants have arrived in the Gulf of Mexico region under the U.S. government's H-2B program. Table 3.3 lists the number of H-2B visas that were requested by and certified for southeast Jackson County's employers seeking workers between 2000 and 2010. As indicated, the number of requests was significantly higher than the number certified. Table 3.4 lists the locations and job titles for visas certified to companies specializing in welding and other fabrication-related jobs and visas for which requests were denied. The first year that any companies were certified to receive H-2B visas for work related to fabrication in the county was 2001. The number of requests was significantly higher than the number certified. The table only shows visas certified. One company requested 474 visas for 2008 alone, but received none.

Table 3.3.

H2B Visa Certifications/Requests for Southeast Jackson County, 2000-2010*

Year	Construction	Fabrication	Fishing	Hospitality	Other
1999	0/0	0/0	0/0	0/0	0/0
2000	0/0	0/0	0/0	0/0	0/0
2001	0/0	45/45	0/0	0/0	10/10
2002	0/0	0/0	0/0	0/0	0/0
2003	0/0	0/0	0/0	0/0	35/35
2004	0/0	598/598	0/0	0/0	0/0
2005	0/0	0/0	0/0	0/0	0/0
2006	150/150	890/890	4/4	0/0	0/0
2007	300/450	1837/3440	0/0	0/0	0/0
2008	150/150	0/1347	0/0	0/0	0/0
2009	0/0	0/0	0/0	0/0	0/0
2010	0/0	0/0	0/0	0/0	0/0

*Includes Gautier, Moss Point, Pascagoula
Source: U.S. Department of Labor 2011
Note: Construction includes construction worker; fabrication includes all types of welders, pipe fitters, metal fabricators (see Table 3.4 below); fishing includes fisher, shellfish shucker, deckhand fishing vessel, and such; hospitality industry, for restaurants and hotels, includes kitchen helper, food assembler, housekeeper, and such); timber includes forest workers, tree planters, and such; and other includes everything else.

Table 3.4.

H-2B Visas Certified in Welding and Fabrication-Related Jobs in Southeast Jackson between 2001 and 2008

Year	City	Job Type	Number Certified	Number Denied
2001	Gautier	Pipe Fitter	10	0
2001	Gautier	Shipfitter	35	0
2004	Gautier	Pipe Fitter	100	0
2004	Gautier	Shipfitter	100	0
2004	Gautier	Welder Fitter	398	0
2006	Moss Point	Fitter I	200	0
2006	Moss Point	Arc Welder	400	0
2006	Pascagoula	Fitter	180	0
2006	Pascagoula	Welder, Gas	110	0
2007	Moss Point	Resistance Brazer	399	1
2007	Moss Point	Fitter	0	200
2007	Moss Point	Fitter I	0	100
2007	Moss Point	Metal Fabricator	400	0
2007	Moss Point	Pipe Fitter	200	0
2007	Moss Point	Welder Assembler	250	0
2007	Moss Point	Welder Fitter	388	12
2007	Moss Point	Arc Welder	200	300
2007	Moss Point	Combination Welder	0	200
2007	Pascagoula	Fitter I	0	252
2007	Pascagoula	Metal Fabricator Apprentice	0	118
2007	Pascagoula	Welder Apprentice, Arc	0	82
2007	Pascagoula	Welder Fitter	0	200
2007	Pascagoula	Arc Welder	0	138
2008	Moss Point	Fitter	0	65
2008	Moss Point	Pipe Fitter	0	200
2008	Moss Point	Welder Fitter	0	60
2008	Moss Point	Arc Welder	0	200
2008	Pascagoula	Assembler Brazer	0	200
2008	Pascagoula	Fitter I	0	270
2008	Pascagoula	Metal Fabricator Apprentice	0	86
2008	Pascagoula	Welder Fitter	0	36
2008	Pascagoula	Arc Welder	0	230

Source: U.S. Department of Labor 2011

Note: The table only includes employers in Jackson County. In 2006, a labor contractor in Gulfport was certified for 150 arc welders. In 2007, shipyards in Gulfport were certified for pipefitters (40) and electricians (20). In 2008, they were certified for electricians (20), construction workers (200), arc welder apprentices (40), pipefitters (40), structural steel workers (40), and prototype carpenters (10).

In 2007 and 2008, Pascagoula drew attention from national and international labor rights groups when, soon after their arrival, workers from India, housed in barracks at Signal International, began to raise concerns about their conditions. The workers connected with worker justice organizations and used various means, including walk-outs, lawsuits, and a hunger strike, to draw attention to their situation. In June 2010, the United States Citizenship and Immigration Services ruled that about 150 workers had been subject to involuntary servitude and therefore were entitled to visas set aside for victims of human trafficking (New York Times 2010). Signal posted a "Recruitment Fraud Alert" on its website and stated that the company was not recruiting abroad for foreign workers for any of its facilities. The case had not been resolved when this study was being concluded; though a lawsuit was still pending against the company, a U.S. federal judge denied the workers class certification in the case (Maritime Activity Reports 2012; see Austin Forthcoming). At the height of the activity, the protests and lawsuits had repercussions for other companies and workers. In one case, after a Jamaican worker complained about working conditions, the labor recruiter informed all the Jamaican workers he had recruited and the companies they worked for, that they would be sent home. Both employer and employees expressed frustration and anger over that situation.

H-2B visa holders aside, a significant number of international immigrants have arrived in southeast Jackson County during the last decade without official documentation, and some have been employed in fabrication and shipyards. However, the research team could not determine precisely how many undocumented individuals there are residing in the area or working in the industry.

3.6. DISCUSSION

Southeast Jackson County differs from the other Gulf Coast communities in this study because it relies on one very large shipyard which does primarily military construction, and several other large shipyards and fabricators. Thus, rather than the petrochemical industry, military spending has a major role in the fate of the shipbuilding and fabrication industry there. Still, the shipbuilding and fabrication industry has been notoriously volatile throughout its history, and coupled with the aerospace industry and the oil and gas industry, is a dominant influence on the local economy and local politics. Future developments, such as construction of a gasification plant in Moss Point, will provide additional revenues and jobs in the region and could attract workers to higher-paying jobs, possibly prodding shipyards and fabrication shops to change current working conditions in ways that make them more favorable to workers.

In southeast Jackson County, there has been a consistent pattern of individuals moving in and out of relatively stable positions at the military-based yard to take advantage of opportunities in various markets on their own, and then returning to that yard when conditions in other markets became unfavorable. Also, people from outside this region have arrived in response to industry down cycles elsewhere on the Gulf and many either had traveled or continued to travel among the various Gulf Coast communities for work (PP087 2008; PP089 2008). Their movements were often repeated; some workers had traveled between Louisiana and Mississippi, for example, many times in their careers.

The severe up and down cycles, which are a distinctive feature of shipbuilding and fabrication, have had and continue to have substantial impacts on communities in this study area. During the 1980s, the majority of the smaller fabrication shops in Pascagoula and Moss Point were being operated by individuals who had obtained their training from large local yards and gone on to open their own businesses during the favorable economic cycle of the previous

decade (see Chapter 3, Volume III). However, not all yards or businesses started during the 1970s boom survived.

A significant consequence of these cycles has been the periodic loss of portions of the shipbuilding and fabrication workforce as at least some individuals who have been laid off in each downturn have failed to return to the industry. Though some businesses have used periodic layoff and hiring cycles as mechanisms for matching their workforce to demand, others have recognized that that approach to management, which was tolerated during earlier periods when labor was more readily available, has proven unsustainable over the long term. These strategies could work during the 1980s and other times when labor was more readily available. For example, HAM Marine, a fabrication company, would only hire workers after a contract was signed. According to a former vice president, "You could literally hire 100 people in one week. We would get a job and could hire them before the rig could get in here, we would hire 100, 200, 300 people per job" (Crawford 2008). When the job was finished, the workers would be laid off. With increasing competition for workers, particularly skilled workers, the practice has negatively impacted individual companies' and the entire industry's ability to attract and maintain labor during boom cycles. Still, it is not clear whether southeast Jackson County's large fabricators can or will provide steadier employment for workers. Growth in the number of labor contractors, as well as increasing efforts to employ foreign workers, have served to enable shipyards and fabrication shops to continue implementing their long-standing management practices. The area's smaller fabrication shops, in contrast, try to manage the cycles by carefully monitoring growth and limiting expansion so as not to grow beyond their means. Unchecked expansion during upturns have brought disaster to smaller firms that are generally less capable of pulling back or less willing to do so during business downturns.

Overall, in this study area, the decline in manufacturing work since the 1970s and the accompanying rise in service sector employment have created additional challenges for those seeking to attract workers to this industry. Local shipbuilders have established regional training partnerships and have attempted to reconfigure the industry following broader national trends to allow for more flexibility, and responsibility, on the part of workers with respect to both training and work.

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4. LAFOURCHE AND TERREBONNE PARISHES

4.1. INTRODUCTION

The southeast Louisiana study area is defined as the portions of Lafourche Parish and Terrebonne Parish south of US Highway 90, where the shipbuilding and fabrication industry is concentrated. The area includes, in Lafourche Parish, the towns of Golden Meadow and Lockport, the census-designated places (CDPs) Mathews, Larose, Cut-Off, and Galliano, and two unincorporated communities, Leeville and Port Fourchon. In Terrebonne Parish, the study area comprises Houma plus the CDPs and unincorporated communities south of Houma, including Bourg, Chauvin, Cocodrie, Dulac, Grand Bois, Isle de Jean Charles, Klondyke, Montegut, and Pointe-aux-Chenes. Grand Isle of Jefferson Parish is accessed via Lafourche Parish (see Figure 4.1), and Grand Isle's shipyards housed workers employed in Lafourche Parish when the research team conducted fieldwork, so, although Grand Isle lies outside the study area, we discuss it where appropriate. The study area lies within the Houma-Bayou Cane-Thibodaux Metropolitan Statistical Area (MSA), but it is important to recognize that the MSA also includes the parts of Terrebonne and Lafourche parishes north of US 90, but excludes Grand Isle.

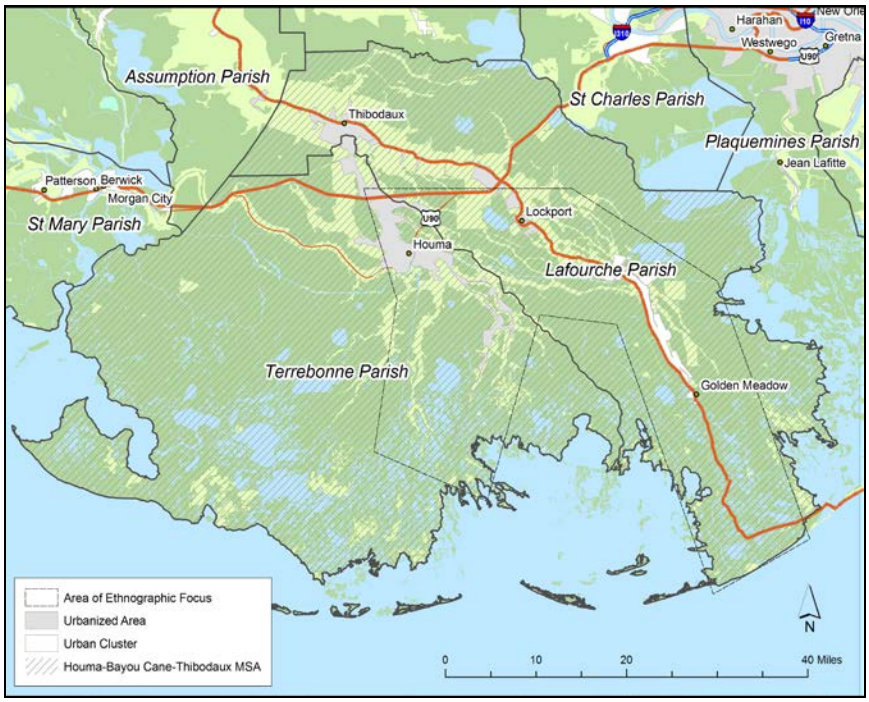

Figure 4.1. South Louisiana study area.

Map created 2011 using data packages included with the ArcGIS software suite. Sources used to create these data layers included: ArcWorld/ESRI, National Atlas of the United States, Tele Atlas, U.S. Bureau of Transportation Statistics, U.S. Census, and U.S. Geological Survey.

By World War II, an ethnically diverse mix of people had found its way to this region, but communities were generally segregated along racial lines: white (mostly Acadian, also called Cajun), African American, and Native American. The region's residents—particularly people born and raised there—distinguish these communities to varying degrees, at times asserting sharp distinctions among them and at other times muting them. In this chapter, we aggregate the communities to facilitate discussion of their similarities, differences, and general interrelationships with regard to the shipbuilding and fabrication industry.

Houma, about 45 miles southwest of New Orleans, is the largest city in Terrebonne Parish and the MSA. Founded in the early 19th century, the town derived its name from the Houma Indians and developed as a trading center at the convergence of six bayous. For the first 100 years, sugar cane and seafood dominated the local economy. By 1923, the Intracoastal Waterway reached Houma; in the early part of the 20th century, the discovery of oil and gas in the region and two world wars, shipbuilding and fabrication, a ship channel, and a regional airport, transformed Terrebonne Parish into an important industrial center. In recent decades, Houma has sought to diversify into the medical and retail sectors, but its economy remains largely dependent upon the oil and gas industry, which it supports through a vast range of fabrication, transportation, labor contracting, and service companies.

To the east of Terrebonne, running along the length of Lafourche Parish, is Bayou Lafourche, a 77-mile-long waterway that empties into the Gulf of Mexico. Locals named it the "Longest Street in the World" because of its early importance as a commercial thoroughfare uniting the various farming and fishing communities along its banks. As oil exploration burgeoned in Lafourche's southern marshes and lakes, local entrepreneurs seized opportunities to build businesses that flourished with oil company contracts. These "Cajun mariners" drew on their knowledge of area waterways and their expertise in boatbuilding to capitalize on the oil boom that was reshaping the area's landscape and economy (Falgoux 2007). Bayou Lafourche remains the main artery in the livelihoods of parish residents. Shrimping and fishing remain at the core of many people's identities in the parish, even though economically these activities have been displaced as the primary economic force by the oilfield service sector. Several of what began as humble Cajun boat businesses along Bayou Lafourche have since become massive global shipbuilding enterprises; Port Fourchon at the southern tip of the parish is the single largest oilfield support facility in the Gulf of Mexico.

4.1.1. General Description

Boatbuilding has long been central in the livelihoods of southeast Louisiana residents. Geography and abundant natural resources enabled some in the region to prosper from waterborne trade and maritime-related commerce. Even those outside the principal commercial networks harvested their food from and developed livelihoods that depended directly on the environment. Numerous rivers and bayous were thoroughfares, and local timber, seafood, and trapping trades prompted the construction of shallow flat-bottomed craft capable of maneuvering through marshes and swamps. Historically, the area's economy was also based on sugar cane cultivation and large plantations stretched across the region.

The location of arable land was a key factor in community organization. Cajun residents with historic ties to the community owned sections, measured in French arpents (an arpent is 192 linear feet), where they lived and practiced small-scale cultivation. Long, narrow lots fronting the bayous provided each family with water access, which was critical for transportation. Upon reaching adulthood, children would build their homes on family land, with each generation

moving farther from the bayou and toward the marsh. Levees constructed across the marshland helped protect the property inside but hastened erosion of the land beyond them.

In addition to what most families hunted, fished, and gathered, they raised animals and cultivated small food gardens. Boats used to obtain rich resources from the region's wetlands, lakes, and other water bodies were also needed to transport goods to markets. Residents lacking access to land often lived on their boats, shifting seasonally among shrimping, crabbing, fishing, hunting, and trapping.

Natural waterways, and those dug to facilitate transportation, linked the region, and the commodities that people drew from it, to the two major rivers, the Mississippi and the Atchafalaya, and to the Gulf of Mexico. Trade and manufacturing increased in the late 19th century after the introduction of rail lines connecting New Orleans and the surrounding parishes to national markets. In the early decades of the 20th century, oil discoveries in the marshes and inland lakes set in motion a social and economic transformation that eventually established the area as an important hub for Gulf of Mexico oil and gas production.

In the 1920s, oil exploration reached southern Louisiana, with Leeville, Golden Meadow and other towns along Bayou Lafourche as sites of significant activity. Cajun boat builders contributed to the nascent Louisiana oil industry by furnishing shrimp boats and oyster trawlers to transport seismographers, equipment, and fuel to the oilfield sites. Innovative vessels like the Cheramie marsh buggy, a tractor mounted on pontoon wheels, helped the oilmen in their search for oil and gas in the often impassable wetlands of coastal Louisiana (Austin et al. 2008).

The industry's movement from the marshlands and shallow bays to offshore waters began in the late-1940s and early-1950s with the discovery of fields in areas such as Ship Shoal, South Timbalier, Terrebonne Bay, Grand Isle, Barataria Bay, Bay Marchand, West Delta, and Main Pass (Lindstedl 1991). As the petroleum industry expanded into the Gulf of Mexico, the wooden rigs and platforms that had been sufficient for onshore drilling and production were no longer adequate. The transition from wood to steel and the need for larger, more complex structures spurred the development of large-scale fabrication yards, where the barges, rigs, and platforms that went offshore were designed and built.

For the next three decades, as both the offshore petroleum industry and the seafood industries grew, shipbuilding and fabrication expanded along the waterways of southeast Louisiana, and the communities in the region changed as well. Local settlement patterns provided many people with access to the water. Numerous skilled craftsmen began constructing vessels in their yards and the yards of their neighbors. Some companies quietly began to buy up land upon which they would later establish large shipyards. With few incorporated communities and limited zoning, residents sometimes found major industrial operations sprouting up just across the fence from their homes. Although some citizens spoke out against the changes, civic and business leaders generally responded favorably to them, supporting improvements in infrastructure, such as canals, and the development of port facilities to promote industrial development that provided additional tax revenues and created jobs (Acadiana Profile 1980).

4.1.2. Principal Ports and Key Infrastructure

Two ports, two airports, several industrial parks, and a network of rivers and canals serve Lafourche and Terrebonne parishes (Figure 4.2.). The region's main ship channels are the Houma Navigation Canal and the Intracoastal Waterway, which link it to the Gulf of Mexico and the Mississippi River. Bayou Lafourche and other smaller waterways connect a significant number of shipyards, fabrication facilities, and drydocks to the major transportation corridors noted above.

Figure 4.2. Ports of Lafourche and Terrebonne.

Map was created in 2011 using data packages included with the ArcGIS software suite. Sources used to create these data layers included: ArcWorld/ESRI, National Atlas of the United States, Tele Atlas, U.S. Bureau of Transportation Statistics, U.S. Census, and U.S. Geological Survey.

Although water is readily accessible throughout the region, as the scale and scope of offshore operations in the Gulf grew, new and larger industrial facilities were required to produce vessels and machinery suited for work in the deeper waters of the Gulf. As the petroleum industry moved farther offshore, companies such as Bollinger Shipyards, founded in Lockport in 1946, and Edison Chouest Offshore, founded in Galliano in 1960, became key providers of innovative offshore vessels and equipment. By the early-1950s, Terrebonne Parish joined Gulf expansion, when Universal Iron Works, Main Iron Works, and other companies opened in Houma. Given that the companies required channels and ports, industry executives lobbied for modifications of the physical environment that would enable further development. The Army Corps of Engineers

carried out many of these modification projects, including construction of levee systems, digging or deepening navigational canals, and port construction or expansion.

The Port of Terrebonne is a medium- to shallow-draft port that handles a relatively modest amount of cargo at its location. Established in 1963 on a 400-acre site near the Houma Navigation Canal's intersection with the Gulf Intracoastal Waterway, this port was not dug out until the mid-1990s. It began leasing in 2004, and marine fabricators and oil/gas service companies were its six major tenants at the time of fieldwork for this study.

Port Fourchon, in contrast, is a cargo port and the largest marine facility on the Gulf Coast. As a "superport," it continues to grow at a rapid pace, expanding its capacity to support deepwater Gulf of Mexico oil and gas development. The port was established in 1960 by a decree of then Governor Jimmy Davis. In 1978, two companies were located on port property. By 1999, this number had jumped to 124, and additional leases were issued as the port expanded (Keithly 2001). The physical footprint of the port was 25 acres in 1980, but, once the ongoing "Northern Expansion" project has been completed, port acreage will increase to nearly 1,700 acres. "C-Port", "a one-stop-shopping dock, was developed by Edison Chouest Offshore and opened in 1996 with specialized slips, configured to transfer cargo safely and efficiently, and provide a wide range of support services to accommodate the largest of deepwater offshore vessels (Edison Chouest Offshore 2003). "C-Port" is recognized as one of the world's most sophisticated deep-water vessel service stations. Nearby, the Louisiana Offshore Oil Port (LOOP) is a deepwater port designed to receive, store, and deliver crude oil from tankers, and in 2010 was connected to over 50% of the U.S. refining capability (LOOP LLC 2011).

North of Port Fourchon at Galliano is the South Lafourche Leonard Miller Jr. Airport, which the port acquired in 2002 as an additional transportation hub (Fourchon 2010). The airport's primary activity is transporting workers, supplies, and equipment to and from offshore rigs and platforms. Annual throughput reached 38 million tons of cargo in 2006, with 95% of this activity being oil and gas related. At the start of the 21st century, 44% of the businesses located at the port were involved in offshore oil and gas support services, while 12% were directly involved with oil and gas exploration (Keithly 2001; The Greater Lafourche Port Commission 2011). The region's second airport, the Houma-Terrebonne Airport, is also used primarily to transport workers to offshore platforms or otherwise service the oil and gas industry.

The Achilles heel of Port Fourchon has been its lack of sufficient ground transportation. No railway enters the port, and for decades its only highway access was a stretch of the two-lane highway LA1, traversed by more than 1,000 trucks each day (LA1 Coalition n.d.). Multiple stakeholders, led by the LA1 Coalition, spent years lobbying the federal government and the state to further develop LA1 into a larger highway with elevated flood clearance. The State of Louisiana responded by initiating phase 1 of construction in March 2007 and, as of 2011, the project was nearly complete (Louisiana Department of Transportation and Development n.d.). In addition to being essential for the expansion of Port Fourchon, an improved LA1 was touted as important for providing greater security during hurricane evacuation.

4.1.3. Current Industrial Profile

According to the characterization of yards based on company ownership developed for this study and described in Chapter 1 of this volume, yards in southern Louisiana are representative of all four types (Figure 4.3): yards that service or fabricate only rigs and platforms, yards that service or fabricate only vessels, yards that service or fabricate rigs and platforms and vessels, and small specialty shops. The on-land requirements of these yards include parking areas capable

of handling large crews and their vehicles, covered and uncovered work areas, and large storage areas for components and other structural steel that will eventually be placed on a rig or platform or hauled away for scrap.

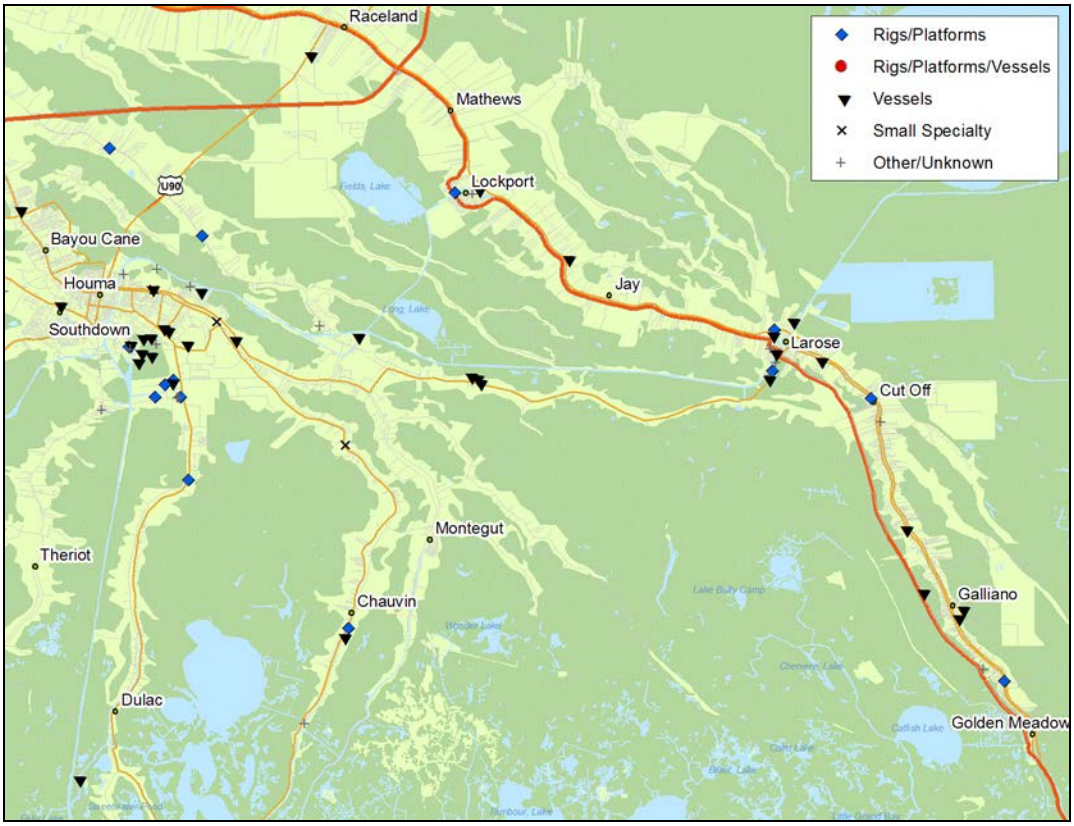

Figure 4.3. Fabrication and shipyards in the Lafourche-Terrebonne study area.

Map was created in 2011 using data packages included with the ArcGIS software suite. Sources used to create these data layers included: ArcWorld/ESRI, National Atlas of the United States, Tele Atlas, U.S. Bureau of Transportation Statistics, U.S. Census, and U.S. Geological Survey. Additional shipyard data assembled by Jacob Campbell and Sarah Raskin, 2008-2010, from multiple sources, primarily company websites, business directories, and ethnographic data collection

Due to the cyclical character of the shipbuilding and fabrication industry, the number of employees on a yard may fluctuate significantly. Yet the yards range in size from the small shipyards that line the bayous and may employ only a few individuals to large fabrication companies that have several yards within the region and employ a few thousand employees during times of peak activity. The large yards are positioned along the bayous and channels, and have been an active force in efforts to deepen waterways, such as the Houma Navigation Canal, that provide them with access to the Gulf of Mexico. Large yards feature parking areas capable of handling large crews and their vehicles, along with large storage areas for components and other structural steel, and most have both covered and uncovered work areas.

4.2. HISTORY

As already noted, people and companies of southern Louisiana have been producing vessels since long before World War II. Unlike in other study regions, however, only a few Lafourche Parish or Terrebonne Parish shipyards grew during the war, when expansion occurred in and around New Orleans. Instead, in terms of numbers of vessels, production in the two parishes expanded rapidly in the 1970s with the growth of the offshore petroleum and fishing industries and has continued to reflect the up and downturns in oil and gas development (see Figure 4.4).

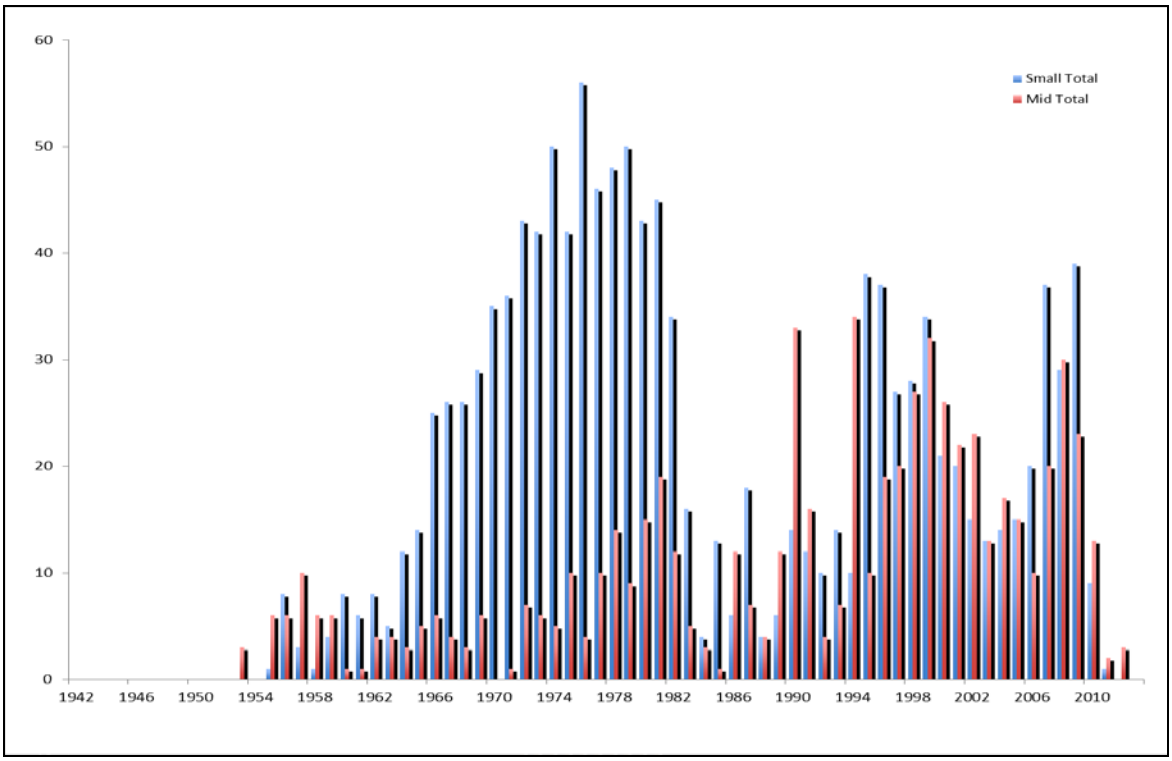

Figure 4.4. Number of rigs and vessels produced at yards in southern Louisiana, 1940-2010.

Source: Colton n.d.a.
Note: Rig data are incomplete.

4.2.1. Maritime and Shipbuilding History to 1945

For generations, the people of southern Louisiana built and used light-weight, flat-bottomed pirogues and bateaus to make a living in the marsh trapping muskrats, netting seafood, and hunting in coastal Louisiana's narrow, tidal waterways. The bayous of Lafourche and Terrebonne parishes were dotted with small family-run shipyards serving the transportation and seafood industries. By the 1930s and 1940s, local trappers and fishermen were using their vessels in the oil fields to locate potential leases, transport seismic crews, and move supplies. Meanwhile, local shipbuilders adapted their designs to meet the new demands. These early oilfield boats needed to be light-weight and easy to handle for portage over land and had to be able to traverse the narrow channels. They also had to be durable and built to last in coastal Louisiana's unforgiving environment, as illustrated by the small, flat-bottomed, aluminum "Jo boats" that became popular in the 1950s (Austin et al. 2008).

During the late-1930s, flat-bottomed boats essential to life in the Louisiana wetlands influenced designs by Andrew Higgins, one of the most important shipbuilders of World War II. Before the war, Higgins modeled one of his earliest and most successful designs, which he called the Wonderboat after these Cajun craft, and then modified its design to produce the Eureka model, which later became the Landing Craft Vehicle Personnel (LCVP) troop carrier, essential in countless amphibious operations (Heitman 2001).

World War II stimulated shipbuilding and New Orleans-area shipyards dominated the industry in Louisiana. From 1940 to 1944, employment in the war manufacturing industry — much of it centered on shipbuilding—increased from 4,685 to 64,500 (Heberle 1948). The Delta Shipbuilding Company and Higgins Industries employed more than 25,000 workers and produced a lion's share of the landing craft and Liberty ships built along the Gulf Coast in the 1940s. Andrew Higgins built 12,300 shallow draft Higgins Boats, prompting General Dwight D. Eisenhower to dub him "the man who won the war for us" (Ambrose 1994). Higgins Industries expanded to Houma and that enterprise built numerous Higgins boats and other craft, at one point launching seven boats per week (Strahan 1994; Theriot 2010).

The largest shipbuilder in Louisiana was founded as Avondale Marine Ways in 1938, about 12 miles upriver from New Orleans. The company began as a barge repair business, but added riverboat and barge construction before the outbreak of World War II and became a major contractor for the government and the offshore oil industry. Although Avondale is outside the study area, its presence in southern Louisiana influenced the area's shipbuilding and fabrication industry, especially through its employees, many of whom moved to other yards and companies during their careers.

4.2.2. Shipbuilding and Fabrication in the Postwar and Early Offshore Oil Era, 1950s-1980s

After World War II, vessel construction continued in backyards and along the banks of the bayous by craftsman using basic equipment and whatever material was available. Ropes hanging from trees did the work of cranes. Some small yards came and went over the years while others persisted, sometimes changing names and even locations several times. Despite limitations of physical scale and economic operations, the small yards yielded a significant number of talented boat builders. Some provided training grounds for new builders, and others were outlets for talented craftsmen who tired of conditions at the large yards or sought opportunities for greater personal investment (see Chapter 4, Volume III). The 1949 Houma City Directory, for example, lists eight boat/shipbuilders and a dozen machine shops and marine repair companies. Among them were Edward Rhodes and Rhodes Boat Works. The Rhodes family had been accomplished boat builders for decades. Local wooden boat builders, such as Orville Guidry, Jr., who supplied luggers to the oyster industry, learned their trade as apprentices under Nicholas Rhodes of Little Caillou (Guidry, et al. 1999). As early as 1926, Rhodes men were building boats that could be put to work in inland seismic operations (Williams 2004). During the 1940s and 1950s, Rhodes men continued constructing commercial fishing vessels and luggers, both for themselves and others who put them to work in inland waters for Texaco (Rhodes 2003; BoatInfoWorld 2011). Rhodes Boat Works survived into the 1970s.

Another example is Noah Bourgeois of Thibodaux, who learned to build ships as a welder at Sewart Seacraft in Berwick in the early 1950s before establishing St. Charles Steel Works on Bayou Lafourche to build fishing vessels and tugboats. Similarly, Allied Shipyard in Larose transitioned from building shrimp boats to building workboats and barges. Beginning in 1952,

boat builder Nolty Theriot of Golden Meadow designed and built his "Theriot tugs" at a small yard in the woods along Bayou Lafourche. Theriot, a pioneer in the North Sea workboat industry, built his first North Sea anchor-handling tug at this original shipyard. As his business expanded and the tugs increased in size, he hired other shipyards, such Houma Fabricators and New Orleans-based American Marine, to build his ships (Bourgeios 2009; Falgoux 2007). By the end of the 1970s, his company had become a worldwide operation with six overseas offices and 26 tugs (Acadian Profile 1979).

In Lockport, Barker Barge Line, a firm established in the 19th century to move a variety of products throughout the bayou region, operated a shipyard to repair its own boats and barges. Alex Barker died childless in the 1940s and, thereafter, the business switched hands among several family members. By then, the business was involved primarily in barging petroleum projects on the Intracoastal Waterway. During the 1950s, the company closed its boat and barge service to concentrate on the construction of barges and tugboats for the Gulf oil industry (Leblanc n.d.; Workboat 1949).

In the early 1960s, Harold Halter opened Halter Marine Shipyard on the Industrial Canal in New Orleans and built several boats for the oil and gas industry, including anchor-handling tugs, towboats, and supply vessels. Halter purchased the old Barker Barge Line shipyard in Lockport and began building workboats there in the late-1960s. By the end of the 1970s, Halter —with five shipyards in Louisiana, along with several other yards in Mississippi and Florida—had become the largest manufacturer of onshore pushboats and offshore workboats on the Gulf Coast, and perhaps in the world. Halter's Lockport facility employed approximately 350 workers and built between 16 and 22 boats a year during the 1970s boom (Colton n.d.b; Acadian Profile 1979).

Donald Bollinger worked as a supervisor at Barker Barge Line. Barker left Bollinger an inheritance which he used to open Bollinger Machine Shop and Shipyard on Bayou Lafourche near Lockport (Bollinger 2003). The enterprise started small, with an army surplus warehouse and second-hand tools on largely undeveloped land along the bayou. To develop the property, Bollinger used whatever was available, including water from Bayou Lafourche, when pouring concrete. The business was a family affair that depended on the skills of each member. Donald's father, George or "Bud," the inventor of a steam-powered steering system for steamboats and the one who taught Donald how to build boats, joined the firm, as did Donald's three brothers: Ralph, a mechanic, George, Jr., a welder, and Richard, an engineer. Richard, the youngest brother and a Louisiana State University graduate, became president. Later, Donald's son, Donald T. or "Boysie," with an undergraduate degree in business administration, joined the company.

The Bollinger family initially built and repaired wooden shrimp and oyster boats, some of which they modified to serve the increasingly active Gulf oil industry. The lure of the oilfield prompted Bollinger Machine Shop and Shipyard to shift to steel construction, thus providing the area with its first yard capable of mass-producing steel workboats. The shipyard built 10 vessels in 1956, including its first four specialized offshore supply boats. The boats were: *Offshore Lafourche*, *Offshore Leeville*, *Offshore Lockport*, and *Offshore Lafitte* (Colton n.d.c). Bollinger also built several botruc supply boats for offshore marine pioneers L&M Botruc Rentals in Galliano (see below), and several drilling barges and liftboats for oilfield customers. Demand peaked in the 1970s and Bollinger's backlog mounted. Companies so desired a Bollinger-built vessel, called "the Cadillacs of boats," that some attempted to buy slots to have orders filled (Falgoux 2007; Workboat 1976: 29). As a result, in 1978, Bollinger expanded to Larose along

the Intracoastal Waterway. The Larose yard was primarily an additional repair facility with two drydocks and a marine railway that also included a large, safe harbor to house boats. Before the decade's end, Bollinger employed nearly 350 staff. Employment at Bollinger grew steadily over the next two decades, helping to forge a bond between the family-oriented business and the local community, and contributing to its importance in the local economy (Colton n.d.c; Bollinger 2003; Workboat 1979). The steady expansion enabled the yard to consistently deliver tugs, push boats, barges, and offshore supply boats while maintaining steady repair operations. The company also managed a towing division and its own fleet of offshore service vessels (OSVs).

Area shipyards continued to adapt to the petroleum industry over time. Grand Isle Shipyard, for example, was founded in 1948 by Clyde and Ouida Pregeant, initially to repair commercial fishing vessels. With the arrival of the oil and gas industry, the Pregeants expanded their business and began repairing wooden luggers that serviced the oil rigs. The company's principal early clients were Exxon and Chevron, both of which established operations on Grand Isle. The three Pregeant sons—Robert "Bobby," Clyde, Jr., and Richard "Dickie"—joined the business in the 1950s and 1960s, starting, respectively, as machinist, welder helper, and roustabout, and they advanced to leadership positions within the company in the 1980s. By then, Grand Isle Shipyard was fully an oilfield service company and became known as "GIS Oilfield Contractors." The company moved its operations to Galliano and Raceland to reduce the risk of losses due to hurricanes (Grand Isle Shipyard, Inc. 2010; Besson 2003).

Edison Chouest, a shrimper, got into shipbuilding another way. In 1960, he founded Edison Chouest Offshore, a vessel-service company, in Galliano to provide transportation to and from the rigs and platforms being built offshore. The company, a regular Bollinger customer, expanded into the shipbuilding business with the 1974 opening of North American Shipbuilding, a nine-employee operation, in Galliano. For its first tugboat launch, North American actually rolled the vessel down the street and pushed it into Bayou Lafourche, an inefficient endeavor that prompted a company move to the Intracoastal Waterway in Larose. The yard concentrated almost entirely on building and repairing tugs and supply boats for the ever-expanding Edison Chouest fleet (Edison Chouest 2009; Workboat 1984a).

Other long-time family-run businesses include the Cheramie Brothers of Golden Meadow and Cenac Towing Company of Houma. Cheramie Boatbuilders, founded in 1950 by Minor Cheramie, is well known for building the botruc offshore supply boat, a vessel combining the features of a boat and a truck. L&M Botruc Rentals Inc. of Golden Meadow, started by a descendant of Minor Cheramie, operates one of the largest fleets of OSVs in the Gulf of Mexico (L&M Botruc 2009). Before the discovery of oil in the Terrebonne marshes, Albert Cenac taught his sons, Jock and Alphonse, how to navigate the bayous of coastal Louisiana. In 1929, the brothers formed Cenac Towing and began building towboats for the oil industry. Throughout the decades following WWII, Cenac Towing continued as a family-run operation, building vessels for the inland and offshore oilfield (The Daily Review 2008).

By the 1970s, south Louisiana was recognized internationally for its superb offshore vessels and captains, and many of its boat companies relied on area shipyards for their vessels. For example, Galliano Tugs, one of several family-owned boat companies, has a long history in the workboat business. Jim Danos grew up on a sugar cane farm in Cut Off, along Bayou Lafourche. He got into the boat business in the late-1940s with his father-in-law, who owned a tugboat and worked for Chevron hauling pipe and crude on barges in the Mississippi River. His father-in-law had begun his career in the oil business when Humble Oil hired him and his two shrimp boats for marine transportation during an era before specialized workboats existed. In 1952, Danos

purchased a 52-foot tugboat from Burton Shipyard in Texas and started his own company to push barges down the Mississippi River. Ten years later, as the demand for larger and more powerful steel-hulled tugboats increased to transport drilling rigs and equipment to the offshore waters, Danos had an 80-foot tugboat built at Bollinger Shipyard. In 1965, he had his first supply boat built there. In the early days, owners like Danos visited the shipyard daily and worked closely with shipyard managers to personally oversee the design and construction of each boat, sometimes using only cutouts and molds of plywood to visualize the final product. By the 1970s, the Danos family owned and operated a fleet of tugs and workboats (Danos 2007).

Offshore fabrication and shipbuilding also flourished in Terrebonne Parish, especially along the bayous. As demand for OSVs increased, many individuals designed and built their own boats, and some of them also constructed vessels for others. Local skills and experience were preserved, because yards were passed from one individual to another and the craftsmen opened new yards elsewhere. Access to the Gulf of Mexico became indispensable and, throughout the 1960s and 1970s, a number of shipbuilding firms opened or expanded their operations on or near the Houma Navigation Canal. Among them were Universal Iron Works, Main Iron Works, Delta Shipbuilding and Delta Fabrication, Raymond Industries, and Houma Marine Fabricators. Houma Marine Fabricators exemplifies a company that expanded into the Gulf of Mexico as well as beyond it. The company opened in the late-1960s primarily to build tugboats and towboats for the offshore oil industry, but several of its vessels plied North Sea waters. By the late-1970s, the company began building large OSVs (Colton n.d.c; Colton n.d.e). Tidewater Marine, which launched the first offshore vessel tailor-made to support the offshore oil and gas industry in 1956, established Quality Equipment in Houma in 1969 to build tugs and supply boats and provide repair and maintenance for the Tidewater fleet. The company's name was changed to Quality Shipyards in 1980 (Colton n.d.f).

Several Terrebonne Parish yards started as small welding outfits. Fred Newman, a radio operator transplanted from Montana, started Delta Ironworks in the early-1950s, initially providing service primarily to Texaco in its south Terrebonne fields. Over time, Newman and his partner, D.W. Rha, expanded to include Delta Supply Company, Delta Shipyard, and Delta Construction (Marmande 2002).

Houma native Norris Trosclair opened Universal Iron Works on Bayou Terrebonne with a small shed and a welding truck in 1956 to take advantage of increased demand for tugboats. During the 1960s, the company constructed both tugs and supply boats for oilfield customers, including Tidewater Marine. By the 1970s, the company diversified into designing, fabricating, and erecting steel buildings through a subsidiary called UNICO. It assembled buildings for several Houma car dealerships and for companies throughout south Louisiana and in southern Mississippi (Colton n.d.g; Shipbuilding n.d.a). The company also expanded its shipbuilding facilities during the 1970s. Having outgrown its Bayou Terrebonne accommodations, the firm moved in 1976 to the Intracoastal Waterway, where it built its own large indoor construction facility, a 360-foot by 75-foot structure whose overhead hoists could handle up to five tons and allowed Universal employees to continue working even in bad weather. The new yard also housed a large drydock for around-the-clock repairs on ships up to 3,500 tons. The facility's opening was a major affair. Nearly 2,500 people turned out for a ribbon-cutting ceremony and crawfish boil, and to watch the launching of the 110-foot *Atlantic-Surveyor*. With modernized facilities, Universal became a major builder of supply vessels for oilfield service companies throughout the 1970s (Shipbuilding n.d.b; Trosclair 2009).

Main Iron Works began building steel-hull tugboats and towboats in the early 1950s on Bayou Terrebonne at the end of Main Street near downtown Houma. Former Texaco employees, Jack Guidry and Lawrence Mazerak, started the company in 1947 as a welding shop. They began their careers building and repairing boats at a small Texaco shipyard south of Montegut. By the 1960s, the company had relocated from Main Street to Bayou LeCompte and, a few years later, it opened a second, larger operation on the Intracoastal Waterway near Bayou Blue. During the three-decade offshore oil and gas boom, Main Iron Works delivered more than 300 vessels, mostly tugboats, to service the inland barge industry and the offshore drilling rigs and platforms. In the late 1970s, a peak employment period, the company's workforce exceeded 500 employees, who helped the firm to launch one tugboat per month. Leroy Molaison, president of Main Iron Works, who started with the company in the early-1960s, stated that most new shipyard employees had already learned the basics of boatbuilding, because many of them were fishermen. "A lot of these fishermen learned how to fit and weld, repairing their own equipment, and those normally make your better hands," he said (Molaison 2007).

The south Terrebonne and Lafourche parish shipbuilding and fabrication companies also spawned the development of numerous support services, ranging from specialized machine shops to welding testing services. Although many employers required and offered on-the-job training, both private and public vocational-technical programs were also expanded to meet the enormous demands for specialized labor throughout the offshore petroleum industry. Public programs were generally quite structured and uniform, following state guidelines. Yet, new courses were developed to meet the unique demands of the industry. Welding classes were begun or expanded, and 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.

Shipbuilding and fabrication also enjoyed the support of local, state, and national leaders. The Lafourche Parish Port Commission formed in 1960 to develop Port Fourchon, Louisiana's southernmost port. Port Fourchon initially served as a base for numerous workboats and fishing vessels plying Gulf waters, but developed into one of the Gulf Coast's most important seaports throughout the last decade of the 20th century with the opening of LOOP, the Louisiana Offshore Oil Port (see next section), and especially with the expansion of the industry into deepwater beginning in the 1990s.

In Houma, the 30-mile Houma Navigation Canal, completed in 1961 and maintained by the US Army Corps of Engineers, linked the Intracoastal Waterway south to Terrebonne Bay in the Gulf of Mexico (see Section 4.4.3). The debate over the channel began in the mid-1950s with local business leaders and politicians championing the project in order for Houma to compete with Harvey and Morgan City, two Louisiana cities with deepwater access, for new projects associated with offshore drilling. Leo Ferber, president of Houma-Terrebonne Chamber of Commerce stated, "[W]e in the chamber of commerce definitely believe that this deep water channel is the salvation for the growth of Houma" (The Houma Courier 1955). The 40-mile channel was initially dredged to a depth of 16 feet with bottom width at 150 feet and top width at 300 feet. The Terrebonne Port Commission formed in 1964 to maintain the port of Terrebonne on the canal (Terrebonne Parish 2009b).

As the offshore industry expanded, and many investors were encouraged to put their money into vessels, south Louisiana shipbuilders and fabricators struggled to find workers and materials to keep up with the orders coming in. Moreover, supplementing the construction of oilfield vessels was a steady increase in demand for fishing vessels, especially shrimp boats, as residents from many walks of life acquired sufficient resources to build their own boats or have them built

for them. One report noted that in 1972, 97 boat builders in Louisiana employed 16,000 workers with an annual payroll of $34 million. Four years later, those figures rose to 142 firms with 19,700 employees and a $250 million payroll (Acadian Profile 1979). The late 1970s arrival of Vietnamese fishermen, many with access to financing, further accelerated vessel construction.

4.2.3. Downturn of the 1980s

Many observers expected the 1970s construction boom to continue well into the next decade. In fact, as the 1980s began, most south Louisiana shipyards were flush with orders. The construction of the Louisiana Offshore Oil Port (LOOP), a superport terminal near Port Fourchon, added to the frenzy. LOOP was built in the late 1970s, 20 miles southeast of Port Fourchon by a group of major oil and pipeline companies and began operations in 1981. The privately-run offshore facility was the first and only one of its kind built in the US: a deepwater oil port allowing the largest ocean-going tankers, too large for inland ports, to offload crude to be pumped by pipeline to Lafourche Parish, where it is stored in salt domes onshore and then piped to markets throughout the US. Before LOOP opened, large tankers offloaded crude to smaller tankers offshore, which then carried the cargo to inland ports. In 2009, more than 12% of crude shipped to the US flowed through LOOP (LEERIC 2009; Falgoux 2007).

Despite the optimism of the decade's early years, a combination of forces quickly altered the situation for Gulf Coast shipbuilders and, by 1982, oil and gas drilling in the Gulf of Mexico ground to a halt. Global oil prices began to dive as OPEC and non-OPEC regions—principally the Gulf of Mexico and the North Sea—saturated the market with crude. Operators were forced to stack up rigs and workboats. By the middle of the decade, the oil industry was in a full-blown depression that challenged the viability of shipyards all along the Gulf Coast. Once-flourishing coastal communities entered a period of economic decline, as tax revenues from companies servicing the oil industry fell drastically and people lost their jobs. Fabricators and shipyards that had grown up with the oil industry faced brutal struggles to survive. The trade-industry journal *Workboat* noted that, in 1981, the Gulf Coast was home to about 16 shipyards involved primarily in offshore vessel construction. Only a handful remained in early 1984 (Workboat 1984a).

South Louisiana was hit particularly hard. During the prosperous 1970s, new shopping centers, office buildings, spacious homes, and commercial enterprises had sprung up throughout the region. By 1983, orders for new workboats and rigs were being cancelled. Over the next few years, numerous oil services companies shut their doors, and unemployment levels rose above 25%, the highest in the nation. "For Sale" signs replaced the previously ubiquitous "Now Hiring" signs. As new construction orders plummeted, once prosperous and innovative small and medium-sized shipyards faced financial ruin. Houma's largest offshore fabricators, Delta Industries, Raymond International, and Universal Iron Works, did not survive the economic downturn. In Lafourche Parish, Theriot-MODEC, a joint American-Japanese venture involving Nolty Theriot's son Pye, ceased operations (Falgoux 2007).

To survive, shipyards throughout the region laid off workers and concentrated on repairing the remaining aging ships operating in Gulf and inland waters. Workers who remained on the job were often the most talented and the ones who could handle a variety of tasks. Diversification became essential, forcing shipyards to look beyond the oilfield for new construction orders. For instance, Houma Marine Fabricators built tugs for the Panama Canal Commission, a joint venture involving the governments of the US and Panama, and ferries for use in North Carolina and on Lake Champlain (Colton n.d.c).

Main Iron Works, a company that previously built only tugs and pushboats, was one of the few businesses to foresee an eventual downturn in the industry. Anticipating a decline in orders in the late 1970s, the company constructed drydocks to expand into the repair business. It survived the 1980s by downsizing to about 75 employees, reducing operating and labor costs, and relying primarily on repair work. The firm closed down its yard on Harbor Street in Houma and relocated all its equipment to its yard on the Intracoastal Waterway. The company also went from building 13 new tugs a year to going three years without building one. Its only new construction projects during the 1980s were scallop boats for New England fishing companies. Since its establishment, ownership of Main Iron Works had changed hands several times over the decades and, in 1986, Leroy Molaison, a long-time yard manager and son-in-law of one of the original owners, purchased the yard in anticipation of an economic upturn (Molaison 2007; Workboat 1986).

North American Shipyard and Bollinger Shipyard, in Lafourche, also survived the lean years of the 1980s and emerged as stronger, more diversified shipbuilders in 1990. North American benefited from its affiliation with Edison Chouest Offshore, which, unlike other offshore service companies, actually expanded during the mid-1980s by offering for lease a fleet of cutting-edge, highly-specialized ships and vessels. The Chouest fleet grew more during the oilfield downturn than in its previous 25 years. The fleet included coring vessels, seismic boats, supply boats, utility boats, and vessels specifically designed for maintenance and mooring at LOOP (Falgoux 2007).

North American survived with vessel construction, repair, and refitting during the downturn. Ships and vessels that left North American's yards kept getting bigger and more sophisticated. The 1984 *Edison Chouest* was a 220-foot seismic vessel, and the 1985 *Laney Chouest* was a 235-foot combination anchor-handling, supply, fire, and rescue ship. Joining the Chouest fleet in 1987 was the 240-foot *Damon Chouest*, a multi-faceted anchor-handler/supply boat capable of platform installation, rescue operations, fighting fires, and remotely-operated underwater vehicle (ROV) support with one of the most powerful winches of its kind in the world at that time (Workboat 1984b; Workboat 1985b; Workboat 1987a).

Bollinger opened the decade the same way it had ended the 1970s, by completing jobs for supply boats, tugs, and liftboats. It also ventured into the rig business by constructing two drilling and three platform rigs (Colton n.d.c). By 1983, however, new construction orders dried up and employment levels consistently declined. Bollinger would not build a single boat for the oilfield for the remainder of the 1980s. "Boysie" (Donald T. Bollinger), who by that time had risen to chairman of the board, also took a chance on a contract with the Panama Canal Commission, to build tugs that ultimately propelled Bollinger to new heights (Bollinger 2003). Then, in 1984, Bollinger signed a lucrative deal with the US government to build several 110-foot Island-Class cutters for the US Coast Guard. "The Coast Guard project changed everything," company treasurer Charlotte Bollinger later recalled, for it made the company into a major government contractor (Bollinger 2003). To complete the Coast Guard contract, Bollinger expanded in Lockport with two new facilities for indoor manufacturing, and increased its workforce to more than 500, a rare occurrence in depressed shipyards during the volatile 1980s. A huge celebration in Lockport attended by then Vice President George H. W. Bush and Secretary of Transportation Elizabeth Dole greeted the 1985 launching of the first vessel, *Farallon*. In 1987, after the initial contract had been successfully completed, the Coast Guard awarded Bollinger another $99 million contract for 16 additional vessels. The Bollinger family-run business had become the most important shipbuilder for the Coast Guard and had solidified

its position as a fixture in central and south Lafourche Parish (Workboat 1985a; Workboat 1987b).

Other entrepreneurs seized opportunities during the 1980s. Tied-up workboats sold for pennies on the dollar, making them affordable vessels for conversion to more economically viable uses. Assets of bankrupt companies were auctioned at bargain prices, enabling new ventures to emerge and prosper during the Gulf oilfield resurgence in the 1990s. Prices for land, equipment, shipyards, and drydocks had dropped precipitously. In Golden Meadow, two repair yards opened: Rae Shipyard and Superior Shipyard. Superior emerged from the ruins of the defunct Theriot-MODEC operation. In Houma, offshore services giant Tidewater Marine gained control of Universal Iron Works and changed the name of its subsidiary to Quality Shipyard in 1980.

The collapse of Delta Service Industries led to the creation of two of Houma's most important maritime fabricators: Chet Morrison Contractors and Gulf Island Fabrication. Chet Morrison, a Houma native and LSU engineering graduate, purchased some of Delta's assets to open a marine fabrication and pipeline construction company on family-owned property along the Intracoastal Canal (Morrison 2007). Gulf Island Fabrication was the work of several men, including offshore pioneer and Tidewater Marine founder Alden "Doc" Laborde. In 1985, these men purchased assets of the former Delta Industries and brought along former Delta Fabrication president Kerry Chauvin to open a fabrication yard on the Houma Navigation Canal. Despite the slowdown in the oil patch, Gulf Island signed deals to fabricate components for rigs—both jackets and deck sections—and hull and deck modules for floating deepwater platforms and for a variety of structural components for offshore derricks. The firm became profitable in 1988. The following year it expanded by purchasing 437 acres adjacent to its current facility (Chauvin 2004).

4.2.4 Deepwater Gulf of Mexico, 1990s to 2008

In the early 1990s, after suffering the downturn in the oil market for a decade, the marine construction industry in south Louisiana restructured and reemerged. Several firms had closed their yards or had been acquired by other companies, and many of the smaller businesses had simply disappeared. Most companies that survived did so by diversifying into new areas, such as repairing and refurbishing offshore rigs and workboats, recreational and pleasure boat fabrication, defense contracts, and construction for international markets. More importantly, the 1990s ushered in a new period of exploration and production in the deepwater Gulf of Mexico, and many shipyards and fabricators geared up to support this push into the offshore frontier. Designers and shipbuilding seeking to close the technology gap that existed after the 1980s downturn revolutionized the workboats of the 1990s to handle more loads in heavy seas, at greater distances, and at quicker speeds. The sophisticated OSVs built in this era came equipped with onboard computers, Global Positioning System (GPS) equipment, radar, autopilot, jet propulsion, dynamic positioning, and Z-drive technologies to service the floating platforms in the Gulf of Mexico and beyond. Backlogs, mergers, and severe labor shortages also characterized this decade of change in the south Louisiana shipbuilding and fabrication (Molaison 2007; Falgoux 2007.

Lafourche Parish shipyards Bollinger and North American grew their operations in the 1990s and built dozens of vessels for the military as well as the oil and gas industry. To accommodate increased demand and the advancing offshore market in deepwater, Bollinger initiated an aggressive expansion phase. In the New Orleans area, it added a repair yard in Algiers in 1990

and another one on a former Avondale repair yard on the Harvey Canal in 1993. It moved into Amelia near Morgan City in 1995, after buying part of McDermott's shipyard (see Chapter 5, this volume). The company purchased the remainder of the McDermott yard in 1997 and later added the former Service Marine facility to its family of shipyards. In 2000, Bollinger bought five former shipyards from bankrupt Friede Goldman Halter and, moving into Texas, opened Bollinger Houston and Bollinger Texas City. Bollinger sold its Houston yard in 2005 (Bollinger 2003). Since that time, the company has purchased several older shipyards in Louisiana to expand the business, which include the original Gretna Machine & Iron Works shipyard established in the 1960s for barge construction, now called Bollinger Gretna; the original Alexander Shipyard in New Orleans founded in the 1930s; the original Service Marine Industries shipyard in Amelia, which opened in the 1960s; and the McDermott Shipbuilding yard in Amelia, which is now Bollinger Marine Fabricators (Colton n.d.c). By 2000, the company's payroll had already approached 3,000, making it the largest commercial shipbuilder and repairer in the South, as well as a major US shipbuilder (Times-Picayune 2002; Bollinger Shipyards n.d.; Falgoux 2007: 269).

Bollinger has remained one of the most important builders of Coast Guard vessels. As a subcontractor for Northrup Grumman (see Chapter 3, this volume), Bollinger completed several renovations, including lengthening vessels from 110 to 123 feet. During sea trials, however, hulls on some vessels cracked or buckled and problems occurred with the ships' cameras and weather-related equipment. Consequently, Northrup Grumman cancelled its contract with Bollinger. Nevertheless, in 2008, the Coast Guard awarded Bollinger a contract to build a new Sentinel class of 153-foot patrol boats, a contract potentially worth $1.5 billion. The Department of Justice opened an investigation of the Sentinel project (Daily Comet 2008b).

Bollinger's expansion since the 1990s has coincided with an aggressive campaign to lure skilled workers, who were becoming increasingly scarce. Although shipbuilding in south Louisiana was booming, the region faced a critical shortage of skilled tradesmen. Ads in newspapers, on radio, and on billboards appealed for workers throughout the southeastern United States. Bollinger established an apprenticeship program at South Lafourche High School, held job fairs, and offered cash bonuses to employees who brought in skilled personnel. Unable to find tradesmen in sufficient numbers after the 2005 hurricanes, Bollinger looked abroad and brought in foreign workers through the H-2B Visa Program (see Section 4.5.2.5).

In the early phase of the deepwater expansion, North American Shipbuilding and other large shipbuilders received orders for new offshore supply boats, anchor-handling tug/supply boats (AHTS), and other vessels. North American regularly built technologically advanced craft like *Nathaniel B. Palmer*, an Antarctic icebreaker in the service of the U.S. National Science Foundation, as well as workboats to support a period of significant growth. By 1995, North American was at full capacity with about 500 employees and looking to add more to the payroll. To supplement its workforce, since the 1990s the company has at times brought in foreign workers, even providing them with onsite housing. The 1990s boom forced Chouest to contract out much of its hull and new crewboat construction to several local shipyards, including LEEVAC Shipyards in Jennings, Breaux Brothers Enterprises in Loreauville, and Bollinger Shipyards in Lockport (Workboat 1996). In 1996, Edison Chouest Offshore opened a new shipyard, North American Fabricators, in Houma.

North American has been a significant economic force in Lafourche Parish, its two shipyards adding to what, by 2009, had become a fleet of over 300 workboats for Chouest. North American's output went beyond oilfield support. The Chouest fleet contained the largest number

of privately-owned vessels used by the U.S. military, including highly sophisticated vessels for open-ocean torpedo recovery, submarine escort, and scientific exploration. To remain a leading company, Edison Chouest added shipyards in Gulfport, Mississippi; Tampa, Florida; and Navegantes, Brazil. In 2008, it broke ground on a new shipbuilding facility in Houma, LA Ship, with a potential payroll of 1,000. In its C-Port terminals at Port Fourchon, the company resupplies vessels with a wide variety of cargo and materials within 24 hours (Daily Comet 2008a; Falgoux 2007; The Courier 2008a).

Through the 1990s and into the 21st century, with larger firms like Bollinger and North American building a considerable number of deepwater ships and vessels for the Gulf of Mexico and for the military, many smaller companies found niches in repair and new construction for various types of workboat companies. In 2007, for example, Jim Danos of Galliano Tugs hired a small local shipyard, P & R Shipyards in Cut Off, to build a new workboat. Danos justified the move away from big firms because the larger yards were over capacity and "too compartmentalized" to get a boat built on time and at a reasonable cost. As they have grown, the larger yards have gradually lost the ability to cater to their individual customers on a boat-per-boat basis. According to Danos, boat builders at smaller yards, such as P & R Shipyards, became more versatile and developed more diversified skill sets, whereas workers on the larger yards were less aggressive and had become more narrowly oriented, much like in assembly line production. Although local boat companies have continued to do business with the big firms, during the mid-2000s, the overall increase in demand for newly built workboats created opportunities for other shipyards all across the Gulf Coast (Danos 2007).

In Terrebonne Parish, too, shipbuilding and fabrication yards returned to full capacity in the 1990s. Diversification had been stressed since the downturn of the 1980s, but Houma's shipyards returned almost exclusively to constructing workboats for the offshore industry. After building fishing vessels in the mid to late 1980s, Main Iron Works returned to tugboat construction, its predominant activity since the 1950s. Offshore supply boats and towboats occupied construction crews at the Tidewater Marine subsidiary, Quality Shipyards. Houma Fabricators built an array of vessels: barges, ferries, casino boats, OSVs, tugs and towboats. By the late 1990s, Houma Fabricators had built more than 240 steel-hulled vessels (Bayou Business Review 1998). The Dutch shipbuilding firm Scheepswerf de Hoop acquired the yard in 2001, but sold it four years later to Otto Candies, a marine transportation firm based in Des Allemands, Louisiana with a long history in Louisiana's boat business (Colton n.d.h).

Main Iron Works, occupying 52 acres on the Intracoastal Waterway, survived the downturn and continues to build new vessels, including the specialized "Z-Drive" tugs used for harbor support operations in places like the Houston Ship Channel, active shipping ports that require considerably more versatility in tug support than conventional twin-screw tugboats (Workboat 1995). With five floating drydocks, this Houma-based full-service shipyard is also equipped to handle tug and pushboat repairs. The company has been able to keep a cadre of experienced leaders, welders, and fitters at the shipyard for several years. According to Main Iron Works president Leroy Molaison, throughout the company's history, two and even three generations of shipbuilders have sometimes worked at his shipyard. However, like most Gulf Coast shipyards, Main Iron Works has suffered from a lack of skilled workers. When asked about the potential for bringing in foreign workers, Molaison explained, "You got a lot of yards that are hiring, bringing in people from Mexico and other countries, and they [are] having problems with language barriers and customs and stuff like that. I'd rather not get involved in that." In 2007, Molaison

stated that his company had a backlog of three to four years of new construction for tugs, and that repair work was booming (Molaison 2007).

For decades, Halter Marine had been an important shipbuilding firm on the Gulf Coast. Its Lockport facility alone produced more than 100 vessels for the offshore oil and gas industry since the 1960s. In the early 1980s, Trinity Industries acquired four Halter shipyards, including the Lockport location. In 1996, this shipyard again became part of the Halter Marine Group, but it closed in 2001 when Halter went out of business. Thoma-Sea Boatbuilders, a small company that opened a Houma shipyard in the early 1990s, purchased the Lockport yard and has built offshore workboats since 2005 (Colton n.d.d; Colton n.d.i).

Marine construction firms, such as Gulf Island Fabrication and Chet Morrison Industries, restored Houma's role as a base for offshore fabrication. Gulf Island experienced marked growth during the 1990s, as petroleum companies moved into deeper Gulf waters. The company also produced platforms and other structures for petroleum markets in West Africa, Latin America, the Caribbean, Canada, and the North Sea. In 1997, Gulf Island purchased nearby Dolphin Services to expand its fabrication and repair capabilities and also went public. In 1998, Gulf Island purchased Southport, a fabricator of offshore living quarters, on the Harvey Canal. That same year, it suffered a temporary setback after its 3,800-ton module, the south deck of the massive Texaco and Marathon Oil deepwater *Petronius* platform, plunged 1,800 feet to the bottom of the Gulf while being installed by a J. Ray McDermott heavy-lift vessel. Gulf Island completed a replacement module two years later (Reference for Business 2010).

By 2000, Gulf Island Fabrication's payroll had grown to include more than 1,200 employees, making it one of the largest fabricators of offshore platforms in the United States. It operated recruiting programs throughout the southeast and provided in-house training to prospective recruits. Company president Kerry Chauvin increased wages and benefits to lure workers from nearby shipyards and personally visited local high schools to promote the value of becoming a skilled worker (The Courier, Bayou Business Review 1998; Chauvin 2004).

A reorganization program in 2000 gave Gulf Island Fabrication four subsidiaries: Gulf Island, LLC; Gulf Marine Fabricators; Dolphin Services, LLC; and Southport, LLC, all of which are located near the Houma Navigation Canal. The company also expanded operations to Coastal Bend, Texas, with yards at Aransas Pass and Ingleside Point near Corpus Christi, boosting employment to approximately 2,000 in 2008 (see Chapter 7, this volume). Gulf Island has remained a major player in deepwater fabrication by completing projects for Chevron's massive platform *Tahiti,* and the topsides for BHP Billiton's $850 million *Neptune SeaStar,* two deepwater projects in the Gulf of Mexico. During fieldwork for this study, the company had recently launched a $30 million improvement project for its facilities in Houma, including expansion into shipbuilding and repair. Gulf Island Marine Fabricators' first ship, a 124-foot towboat, slid into the Houma Navigation Channel in March 2009 (Daily Comet 2008c; The Courier 2008b; Seeking Alpha 2009; Schmidt 2009).

Chet Morrison Contractors (CMC), which began operations in the 1980s, grew to become a multi-faceted company involved in platform fabrication and pipeline construction. It also specializes in diving services and plugging and decommissioning work on abandoned oil and gas facilities. The company has carved out a niche by working with small, independent companies active in the shallow waters of the Gulf of Mexico. The young entrepreneur, Chet Morrison, started with an office in his father's Houma lumber yard, Morrison Terrebonne Lumber Center, and slowly acquired assets at various auctions and a reliable management team from the Houma area to facilitate a move to the Intracoastal Waterway in 1990. A small barge and a crane were

Morrison's initial equipment, and seven lean years of inland construction work followed. But in 1997, CMC acquired a Harvey fabrication yard and entered a period of rapid growth domestically and internationally. In 2002, the company expanded to Veracruz, Mexico. The following year, CMC partnered with Trinidad-based Weldfab Limited to start Trinidad Offshore Fabricators (TOFCO) to fabricate offshore platforms in La Brea, Trinidad. In 2004, CMC opened a ship repair and construction facility in Alvarado, Mexico. The company subsequently expanded its facilities in Houma to build ships and to service its fleet of dive-support vessels, pipe-laying barges, tugs and plug-and-abandonment barges (Morrison 2007; Morrison Energy 2009).

No land-based site has become more important to the oil and gas industry, and perhaps more vulnerable to adverse environmental conditions, than Port Fourchon in south Lafourche. Situated on the edge of vanishing coastline and in the direct path of approaching Gulf hurricanes, Port Fourchon has, in the last 15 years, become the premier deepwater port servicing the Gulf of Mexico. Before the 1960s, according to one local boatbuilder, Fourchon "wasn't even a port [and] didn't even have a piling to tie your boat up" (Danos 2007). An early 1970s newspaper article described the site as one insignificant to outsiders: "There's actually no port here at all. It's just the name given by local Cajuns to this stretch of green marsh grass standing in brackish brown water, where a passing helicopter disturbs an occasional egret." However, the article noted that if certain influential people were to get their way, "this place is going to be a real port someday—indeed, a superport, America's first" (The Wall Street Journal 1973). Two decades later, with the creation of the LOOP and the reemergence of offshore oil and gas in deepwater, Port Fourchon had become the critical logistics base for the industry.

In the 1990s Port Fourchon rapidly expanded, as major oil companies and service companies sought to relocate their inland operations and cut transportation costs for the emerging deepwater developments. From 1992 to 1998, the annual cargo handled by the port increased from 5.5 million tons to 15 million tons, nearly all of it to support the offshore oil and gas industry in deepwater (Workboat 1998). What began as a jumping-off point for the LOOP became the deepwater offshore oil port for the 21st century—with over 130 tenants, more than 1,000 acres of existing and future land developments, and facilities, including transportation—that services more than 75% of all deepwater exploration and production, and over half the drilling rigs in the Gulf of Mexico (Offshore 2006).

4.3. Fabrication and Shipbuilding in the Context of Other Occupations and Industries

During the 20th century, three industries dominated the economies of Terrebonne and Lafourche parishes: sugar cane, oil and gas, and commercial fishing. As sugar cane production and commercial fishing waned, oil and gas production waxed, making it, despite the 1980s downturn, the parishes' dominant industry by the end of the century. By then, the health services and retail industries had also begun expanding. Approximately one resident in seven (Magill 2007) is employed in oil and gas extraction or oilfield support services, a figure that does not account for local government and many companies in the service or retail trade industries (Legendre and Lundin 2007a; Legendre and Lundin 2007b), whose success or failure is tied to the oil and gas economy.[9]

[9] The one-in-seven figure does not account for unreported oil and gas work, either by undocumented immigrants or by people—locally born or from elsewhere—who are paid in cash "off the books" by shipyards and fabrication shops. Two informants explained that anyone with a generator in the back of his truck was at least a part-time

Other industries that were once the source of significant numbers of jobs have shrunk or disappeared. Shrimping and fishing, historically the source of many shipyard workers, have declined in recent years, much of their necessary infrastructure either gone or converted to other uses. Table 4.1 lists total commercial fishery landings and the value of fishery products at Dulac-Chauvin and Golden Meadow-Leeville, within Terrebonne and Lafourche parishes respectively, for 1998-2008. Comparative data for Grand Isle, in Jefferson Parish, appear in the table's right-hand columns.

Table 4.1.

Commercial Fishery Landings and Value in Terrebonne and Lafourche Parishes and Grand Isle (Jefferson Parish)

Year	Dulac-Chauvin		Golden Meadow-Leeville		Grand Isle	
	Quantity (million pounds)	Value (million dollars)*	Quantity (million pounds)	Value (million dollars)*	Quantity (million pounds)	Value (million dollars)*
2010	32.8	45.1	14.8	21.9		
2009	42.4	50.9**	25.6	27.4		
2008	35.6	48.9	16.8	23.5		
2007	23.5	35.5	13.7	5.3		
2006	30.8	35.7	17.9	20.7		
2005	42.6	54.6**	24.2	32.1		
2004	40.4	42.8**	26.1	31.6	12.5	14.2
2003	39.4	42.3**	25.5	29.1	18.3	16.9
2002	42.7	46.2**	26.0	31.2	15.1	13.2
2001	46.2	60.9**	24.1	36.9	12.4	15.5
2000	48.2	68.1**	26.9	44.9	18.2	26.4
1999	42.0	49.0**	19.0	29.0	14.0	12.0
1998	30.5	38.7**	17.6	27.1	14.4	17.1

*Note that value varies by species, so there is no direct correlation between quantity and value.
**Dulac-Chauvin was in the top ten U.S. ports in value in these years.
Source: National Marine Fisheries Service (NMFS) n.d.

welder, albeit not officially. Another informant described himself as "sometimes a [shrimp] trawler who welds; sometimes a welder who trawls," depending on what employment was available.

4.4. INFLUENCE OF THE INDUSTRY ON THE PHYSICAL FEATURES OF THE REGION

This study area is bounded to the north by Highway LA 90 and to the south by a network of bays, lakes, channels, and bayous, all of which connect the area to the Gulf of Mexico. The eastern boundary of Lafourche Parish runs through Barataria Bay, and the Atchafalaya River primarily constitutes lower Terrebonne's western edge.

Commercial, residential, and industrial land use in south Lafourche Parish primarily occurs along the north-south trending Bayou Lafourche. Although sugar cane fields stretch east and west of this bayou, the majority of the parish's shipyards and boat repair shops, churches, businesses, and residences are situated within 10 miles of the waterway, and highways LA 1 and 308, which parallel it. The buildings are concentrated in Lockport, Larose, Cut Off, Galliano, Golden Meadow, and Leeville. With the completion of Highway 3235, designed to alleviate traffic congestion along the bayou, commercial development has expanded to the west as well.

The above-mentioned communities have distinctive histories and physical features, but they share many common social and economic characteristics. When shrimp trawlers, tugboats, and other small to medium-sized boats are not working, their owners moor them along Bayou Lafourche. Although the seafood industry has lost its past position as the livelihood mainstay for south Lafourche communities, the prominence of shrimp and crab shacks, fishing boats, nets hung out to dry, and "Seafood for Sale" signs indicate that seafood remains important. Lafourche Parish's most prominent and clearly delineated industrial area is Port Fourchon, operated by the Greater Lafourche Port Commission, which also operates the South Lafourche Leonard J. Miller, Jr. Airport. Shipyards are the other prominent industrial areas in Lafourche Parish (see Figure 4.5).

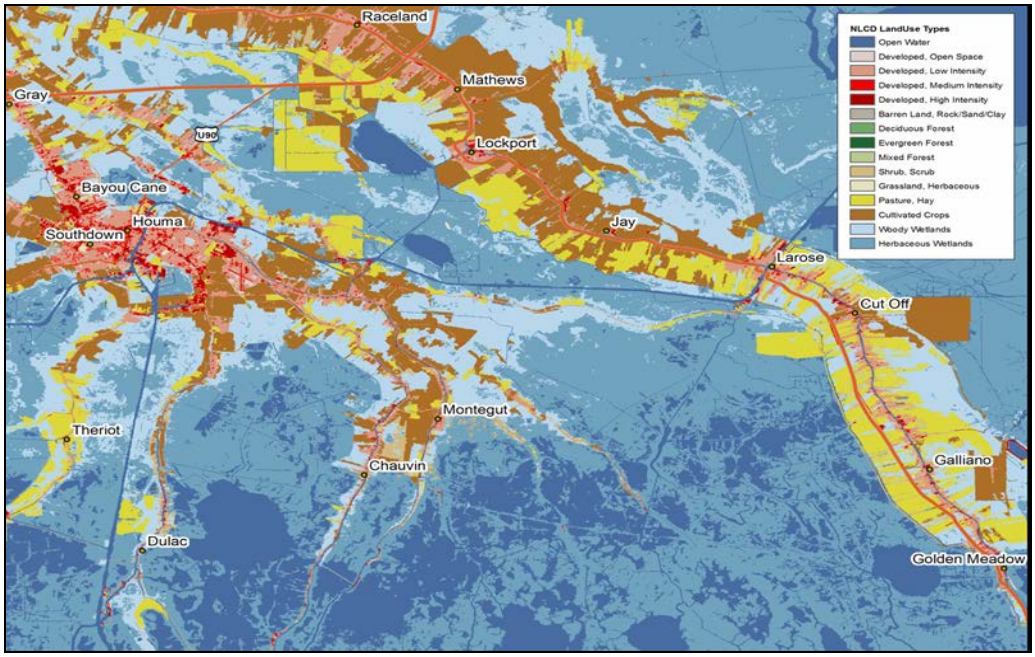

Figure 4.5. Land Use Classifications from the 2001 National Land Cover Dataset (NLCD) for Lafourche Parish and Terrebonne Parish.

Source: Multi-Resolution Land Characteristics Consortium 2001.

The largest population center in south Terrebonne Parish is Houma, which is a shopping and services hub for the entire study area. Houma has a long history of supporting the oil and gas industry, having been a major Texaco base for much of the onshore production period. Yet, fabrication and shipbuilding became an important economic sector for the town after the completion of the Houma Navigation Canal in 1961. Subsequently, this canal zone in Houma developed into an industrial corridor hosting numerous fabrication and shipbuilding yards of various sizes. The town's fortunes have been tied largely to swings in the oil and gas industry. Therefore, while many businesses failed during the 1980s, the rebound of the 1990s set in motion a commercial expansion in Houma that continued relatively unabated through the end of fieldwork for this study. Big box stores and numerous national chains have established locations in rapidly developing areas of town.

Most of the other Terrebonne communities in the study area are located south of Houma. Shipbuilding and fabrication activity occurs there at small drydocks and in welding shops or repair facilities sporadically sited along waterways. Cocodrie is primarily a marina complex serving the oil and gas industry, recreational boaters, and commercial fishermen. The Louisiana Universities Marine Consortium (LUMCON) research station is also in Cocodrie. Pointe-aux-Chenes and Isle de Jean Charles are remote towns located on fingers of land in the marsh with largely Native American populations. Bourg, Chauvin, Dulac, and Montegut were bustling towns in the postwar years when oil production took place in the adjacent lakes, but without deep draft canal access, these municipalities have stagnated economically in the offshore era.

4.4.1. Waterways, Roadways, and Airports

An extensive and complex network of bayous and canals in Lafourche and Terrebonne parishes allows easy access to the Gulf of Mexico and to the Gulf Intracoastal Waterway, which runs the east-west span of both parishes. It is intersected by a number of smaller waterways, including the bayous of lower Terrebonne Parish, such as Bayou Cocodrie and Bayou Dularge, as well as two major north-south running waterways, Bayou Lafourche and the Houma Navigation Canal. These major waterways link the Gulf Intracoastal Waterway to the Gulf of Mexico and also to the area's on-land infrastructure. These waterways enable not only the delivery of the push boats, tugs, OSVs, barges and other vessels that are locally built and repaired, but also allow for less costly delivery of large quantities of heavy building materials, such as steel and aluminum.

Two characteristics of these waterways demonstrate the close relationship between infrastructure and community: channel depths and bridges. The Gulf Intracoastal Waterway is maintained to a depth of 12 feet, the Houma Navigation Canal to 15 feet, and Bayou Lafourche to 12 feet. However, official channel depths do not always reflect actual channel depths. For example, although the City of Lockport does not have the money to maintain bayou depth at 12 feet consistently, businesses will regularly "dig a hole with a crane to make the bayou big enough" to launch vessels that need more depth (SR013 2008). Thirty-three bridges, primarily of vertical lift or swing design, cross the Gulf Intracoastal Waterway, Houma Navigation Canal, Bayou Lafourche, and the area's many smaller waterways.

Channel depths and bridges impact local communities in a number of ways, some of which are contradictory. For example, a deeper channel, and bridges of greater height and span, allow for the building, launching, and passing of larger vessels and structures, which supports the success of businesses. However, deeper channel dredging can contribute to coastal erosion and reduce the quality of residential water. Meanwhile, bridges can cause traffic jams on roads

lasting from a few minutes, when bridges are working properly, to days of total closure and forced traffic diversion when bridges fail to function. An ongoing challenge to the proper operation of bridges in Lafourche and Terrebonne parishes is the routine denial of funding by state legislatures for high-cost repairs.

The negative impacts of the deepening and dredging canals, bayous, and rivers generated an active debate over proposals during the fieldwork period to deepen the Houma Navigation Canal, thereby allowing larger craft access. The canal will require a lock system before the channel can be deepened. Community members have expressed concerns that further channel development will increase the risks of storm surges as well as estuary and wetland loss (see Section 4.4.3). Oil pipelines are being uncovered (and their integrity compromised) throughout the study area as wetlands disappear.

Many major roadways in Lafourche and Terrebonne parishes run parallel to waterways. U.S. 90, the area's largest highway, runs across the northern parts of both parishes. It has been proposed that this highway be upgraded to create Interstate I-49, and residents and community leaders express confidence that the road will be improved. Secondary or residential roads, varying from paved/hardtop to dirt/gravel constructions, snake throughout the parishes.

Levees form another critical infrastructure element in this region. The first levees in both Lafourche and Terrebonne parishes were constructed in the 19th century by individual landowners who were responsible for building and maintaining levees to protect their property. The federal government authorized major levee construction along Bayou Lafourche in 1965 and appropriated funds in 1972. Hurricane protection levees were constructed to surround Cut Off and lower Larose in order to protect bayou communities from storm surge from the Gulf of Mexico Floodgates were constructed in the mid-1980s and a lock authorized in 2005 (CMI 2010). Challenged by its huge size, the lack of high ground, and resistance from private property owners, Terrebonne Parish failed to construct a levee system. Amid growing concerns about coastal erosion and hurricane protection, in 1992 the U.S. House of Representatives mandated a reconnaissance study for the Morganza to the Gulf Hurricane Protection Project, a lock, levee, and floodgate system designed to protect Lafourche and Terrebonne parishes from storm surge. That study was completed in 1994, a feasibility study was completed in March 2002, and an engineering and design process was underway at the time fieldwork for this study was being completed (USACE 2008).

4.4.2. Housing, Commuting, and Traffic

Outside the incorporated municipalities of Lafourche and Terrebonne parishes, residential property is intermingled with industrial and commercial sites. In Lafourche, large brick plantation homes set back several miles from the bayou are remnants of former sugar cane prosperity, and the newest housing developments have been constructed on former agricultural land. Nevertheless, the majority of residences are located on narrow but deep parcels or subdivisions that extend directly away from the bayou. In Terrebonne, too, plantation houses indicate the historical importance of sugar production. Much more than in south Lafourche, however, Houma exhibits a wide array of residential neighborhoods, ranging from trailer home parks to exclusive and wealthy gated communities. Houma's low income housing tends to be close to industrial zones, while expensive homes are located primarily in converted sugar cane fields, buffered from industry.

Among the most significant challenges facing the communities in this study area is coastal erosion. Tropical storms, let alone hurricanes, in the Gulf of Mexico can cause flooding in communities that once boasted pastures or orchards, but are now frequently covered by water. The 2005 and 2008 hurricanes caused considerable damage along Bayou Lafourche and especially in lower Terrebonne Parish, even though residents of these communities promptly repaired many of the affected homes and businesses. For home owners, a significant legacy of the hurricanes has been the redrawing of flood maps and, as a result, the huge increase in flood insurance premiums.

The cost of housing has increased throughout the study area and, it is worthwhile to note, in Thibodaux and Raceland, which lie north of Highway 90. The real gross median rent in the 1970s was $393, substantially lower than the $548 value in 2007 (see Appendix G, pp. 7-7).

The real median home value for the Houma-Bayou Cane-Thibodaux MSA increased 48% from 1970 to 1980, decreased 27% from 1980 to 1990, increased 24% from 1990 to 2000, and increased 7% from 2000 to 2007 (see Appendix G). Renter-occupied units are more prevalent in Houma (32.3%) and Thibodaux (47.7%), than in the suburbs (16.4%) (see Figure 4.6; Appendix G).

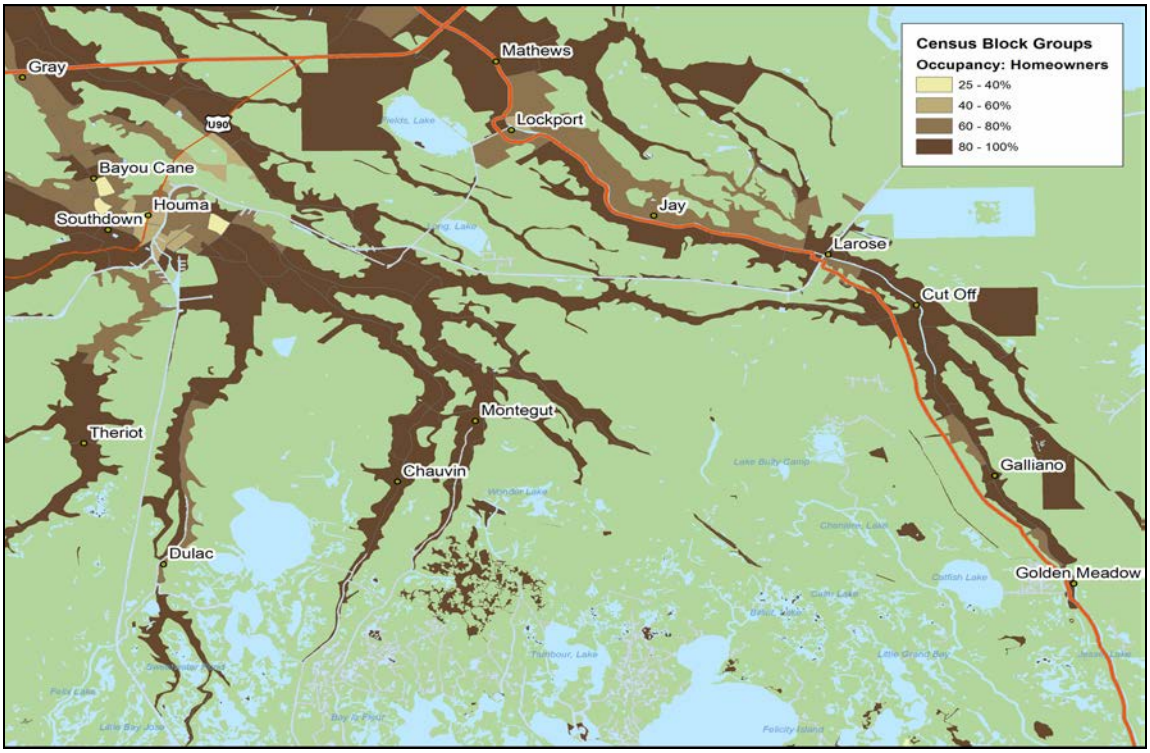

Figure 4.6. Housing occupancy: Homeowners.

Source: U.S. Census Bureau 2000 Summary File 1; U.S. Census Bureau 2010 Summary File 1.

When data for Lafourche Parish and Terrebonne Parish are combined, only 11.5% of the total workforce commutes outside of the two parishes (see Appendix G). Even so, travel times within the parishes can vary widely. Roads are regularly clogged with traffic and waits for draw bridges and lift bridges often back traffic up for blocks, requiring motorists to wait through a number of stoplight cycles. A 20-minute drive in an outlying area on a day with little bridge traffic, clear

weather, and no traffic accidents can turn into an hour commute with a change in any of these factors. Alternative routes often require crossing bayous with one bridge per five miles or more. Many locations throughout the parishes, including major business destinations such Port Fourchon and recreational destinations such as fishing camps, are accessible by only one major road.

Compounding commuting problems is the lack of public transportation throughout much of the study area. Vehicle ownership is high throughout the region, but there are few alternatives for people who do not have cars or trucks. Houma is the only municipality in the two parishes that has a public bus system. Few roads have sidewalks, forcing pedestrians to walk on road shoulders, which may be paved or gravel. Fabrication and shipyard workers, like people who work offshore on rigs and platforms, are known for driving pickup trucks. Local residents regularly identify shipyard workers who ride bicycles to a job site as belonging to a marginalized class or ethnic group. In south Lafourche Parish, field researchers often observed Romanian workers traveling up and down narrow bayou roads on bicycles and, in 2005, a Romanian worker died from injuries sustained when he was hit by a car while riding his bike along Industrial Boulevard in Houma.

The Houma-Bayou Cane-Thibodaux MSA actually has a commuting deficit: the number of commuters leaving the region exceeds the number entering. Manufacturing presently plays a role in this deficit, because more people commute out of the region for manufacturing jobs than commute into the region for manufacturing jobs (see Appendix G, pp. 82 - 83). Most of these commuters work in St. Mary Parish and a large proportion of St. Mary Parish's manufacturing workers live in the Houma-Bayou Cane-Thibodaux MSA. Nevertheless, commuters make up a very small proportion of manufacturing sector's workforce compared to the proportions of commuters in services, forestry, utilities, or other economic sectors.

Table 4.2.

Work Commuting Patterns by Decade for Terrebonne and Lafourche from 1970 to 2000

Parish		1970	1980	1990	2000
Lafourche	Staying	13,690	20,776	20,398	23,645
	Entering	1,418	3,283	4,039	6,445
	Leaving	4,091	10,799	11,173	12,448
Terrebonne	Staying	16,888	31,610	29,025	33,570
	Entering	1,910	8,163	7,403	10,112
	Leaving	2,653	5,290	5,588	6,486

Source: U.S. Census Bureau, Journey to Work and Place of Work Data.

4.4.3. Recent Developments at Port Fourchon and the Houma Navigation Canal

Port Fourchon has benefitted as the petroleum industry has moved farther offshore and the operators and the service and supply companies that provide them with everything from vessels to drilling muds have centralized their operations at a small number of bases. Expansion at the port has included the acquisition of new property, dredging and filling, and the construction of bulkheads. Of significance for those companies seeking to refurbish large equipment such as mobile offshore drilling units right at the port, the most recent expansion project has included a 7,000 by 700 foot slip with bulk headed waterfront property (Offshore 2011).

Plans for continued development of the Houma Navigation Canal also continue. Though the proposed lock has still not been built, construction of a floodgate is expected to be completed in 2013 (USACE n.d.). The Port of Terrebonne, located on the Canal within ½ mile of its intersection with the Gulf Intracoastal Waterway, is constructing drydocks and dredging and bulk heading sites for LaShip and ThomaSea fabricators (Port of Terrebonne 2012).

4.4.4. Economic and Industrial Development

Throughout the fieldwork period, Terrebonne and Lafourche parishes faced economic conditions simultaneously ripe with opportunity for growth and fraught with challenges. The 2005 storms hit at a moment of vigorous upswing in the oil and gas sector, which stalled production and created a backlog of projects across a host of industries (construction, fabrication, exploration, and commercial development) and impacted the region for several years. Although the study area's economy, and especially that of Houma, has become increasingly diverse in recent decades, many residents and community leaders point out that the growth and fiscal health of their communities is tied to the performance of the local oil, fabrication, and shipbuilding industries. They lobby for programs and initiatives, such as further tax and financial incentives, the dredging of canals for greater deepwater vessel access, and improved labor recruitment programs. These programs and initiatives are necessary, residents and leaders argue, to keep these industries in Terrebonne and Lafourche parishes.

4.5. Influence of the Industry on the Population of the Region

The shipbuilding and fabrication industry affects the populations of Lafourche and Terrebonne parishes in numerous ways, as indicated by both qualitative and quantitative data. Changing demographics, targeted workforce development and training, and the emergence of industrial development associations all reflect the industry's influence. Billboards throughout both parishes advertise job openings in shipyards and fabrication shops, as well as offshore services, boat companies, and other oil and gas related jobs. Illustrating a recent campaign to attract more women into the industry, women in hardhats smile down from billboards and on the covers of brochures and flyers (see Figure 4.7). The research team found little evidence of the campaign's success. Still, shipbuilding and fabrication industry employment increased in terms of both numbers of jobs and numbers of firms during 1990-2007. Some consolidation of the number of firms in the industry occurred only in the last few years of the study period. Meanwhile, the average wage in the shipbuilding and fabrication industry also increased (see Appendix G).

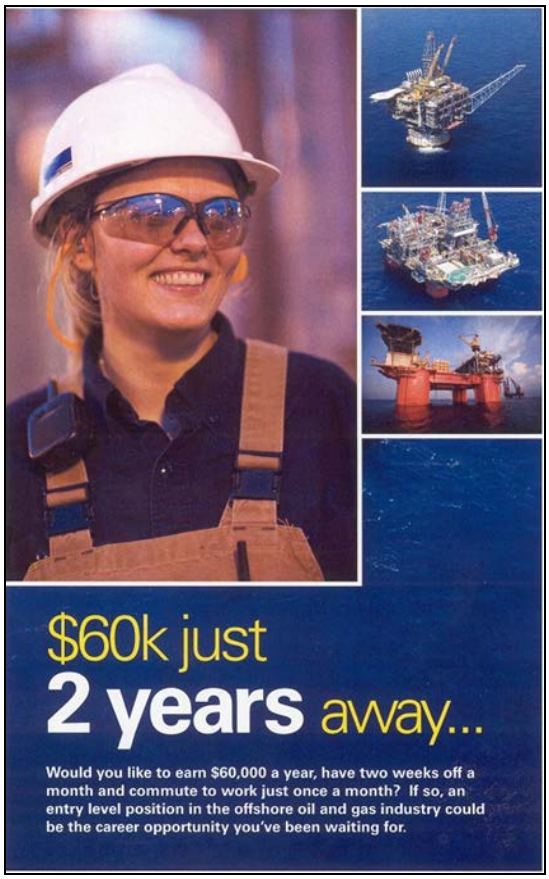

Figure 4.7. Cover of brochure for recent campaign targeting women for employment in the offshore petroleum industry.

During the 1970s, dramatic increases of employment and wages occurred in the manufacturing industry. However, this was followed by the disastrous 1980s, during which both employment and wages declined dramatically. Since 1990, both employment and wages within the manufacturing sector have improved steadily with only very minor setbacks (see Appendix G).

Like many of the other study areas, the Houma-Thibodaux community has experienced a shift from the manufacturing sector to the service sector, not just in terms of the actual number of jobs, but also in the service sector's proportional contribution to total employment. However, unlike the other study areas, the overall decline in the manufacturing sector's proportional contribution to total employment has not been as severe.

With regard to wages, for most of the study period, the average wage in manufacturing was well above the median for the area. The notable exception occurred during the 1980s, when the oil field crashed. From 1970 to 2007, nominal average earnings per job increased by the phenomenal rate of 514%.[10] It should be noted, however, that a very large portion of this

[10] Nominal wages are the wages paid in current dollars unadjusted for inflation, whereas real wages are wages measured in constant dollars adjusted for the effects of inflation. Inflation is typically defined as a rise in the general price level of a typical market basket of goods and services.

increase may be attributed to the 1970s oil field boom, when both real increases and large inflationary increases in wages occurred. Given the tremendous increase in the nominal wage rate, the most intriguing result was the relatively slow growth in real average earnings per job during 1970 to 2007. It would appear that the dramatic decline in the 1980s and the relatively slower stable growth in real wages since the 1980s have combined to create a very modest total growth in real average earnings per job of just under 21% (see Appendix G).

There is some evidence of a significant relationship between oil prices and the employment and income variables for the Houma-Thibodaux-Bayou Cane MSA. Furthermore, changes in economic conditions, as measured by changes in the economic variables, seem to have a significant impact on the personal current transfer variables—for example, food stamp transfers and unemployment insurance transfers—at the parish level. Statistically speaking, it did not appear that the cointegrated-variables model adequately described this relationship. It was more adequately described by a finite distributed lag model for the changes in these variables. Furthermore, although this story would seem to be obvious, the statistical evidence presented provides an indication of the relative strength of these relationships and the immediate timing of these effects for Lafourche Parish, Terrebonne Parish, and St. Mary Parish. In summary, it would appear that a significant change in the manufacturing sector has significant and immediate impact on the social well-being of people living and working in these three parishes.

4.5.1. General Population Dynamics

The populations of Lafourche and Terrebonne parishes have increased since 1970 (see Figure 4.8). The rate of growth in both parishes was high, double the growth rate in the State of Louisiana during 1970-2007, although both parishes lost population every year between 1984 and 1990 (see Appendix G).

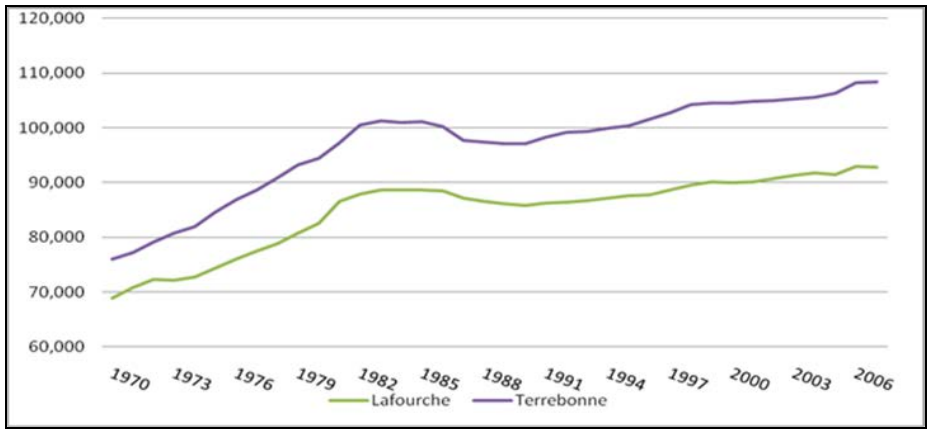

Figure 4.8. Population changes in Terrebonne and Lafourche Parishes from 1970 to 2007.

Source: U.S. Census Bureau, Population Estimates, County.

Since 1990, both parishes have experienced net out-migration, though the difference between the numbers of people who left and entered decreased after 2000. Births and births per capita declined in both parishes as well (see Appendix G). These two demographic trends explain the marginal population growth in the Houma-Bayou Cane-Thibodaux MSA. In addition, household

composition in both parishes is changing, with the number of married couples decreasing and the number of single parents increasing (see Appendix G).

The wealth generated by the petroleum industry is reflected in the median income for the parishes. In 2007, the real median family income in the Houma-Bayou Cane-Thibodaux MSA was $50,882 and for Houma it was $53,805. Following the period of weak economic growth during the 1980s, growth was strong in the 1990s, as incomes rose 68% in Lafourche Parish and 66% in Terrebonne Parish, above the state rate of growth (see Appendix G).

In the Houma-Bayou Cane-Thibodaux MSA from 1969 to 1999, the proportion of people with incomes in the lowest 20th percentile increased from 24.2% to 28.5%; the proportion of people with incomes in the middle 60th percentile decreased from 65.6% to 61.5%; and the proportion of people with incomes in upper 20th percentile decreased from 10.2% to 10.1%. Thibodaux is above the MSA average for incomes in the lowest 20th percentile, whereas Houma is below the MSA average. Thus, although median incomes are increasing, income growth is being driven by increases at the highest 20th percentile (see Appendix G).

In both parishes, poverty rates soared from 1979 to 1993, declined during 1993-2000, and then increased between 2001 and 2004. As of 2007, the poverty rate of the two parishes was slightly less than the state average; Terrebonne Parish's poverty rate was 24.5% and Lafourche Parish's poverty rate was 23.5%, and the rate for the State of Louisiana was 26.9% (see Appendix G).

4.5.2. Workforce Development and Trends

In general, south Louisiana has a robust workforce. The working-age male population has grown at a substantially higher rate than the overall population and overall male population: 76.7% in Terrebonne Parish and 63.9% in Lafourche Parish. As a proportion of the total population, working-age males increased from 22.7% in 1970 to 27.5% in 2007 in Terrebonne Parish and from 22.4% in 1970 to 27.3% in 2007 in Lafourche Parish (see Appendix G). In both parishes, employment growth was stronger during 2000-2007 than in the 1990s. The unemployment rate peaked in both parishes in 1992, briefly exceeding state and national unemployment rates (Figure 4.9). Historically, the unemployment rates in Lafourche and Terrebonne Parish have been below state and national rates, although the Terrebonne Parish rate has generally been higher than Lafourche Parish (see Appendix G). After a decade of increasing unemployment, Lafourche and Terrebonne Parish were benefiting from a surge in employment after Hurricane Katrina and Hurricane Rita at the time of fieldwork for this study.

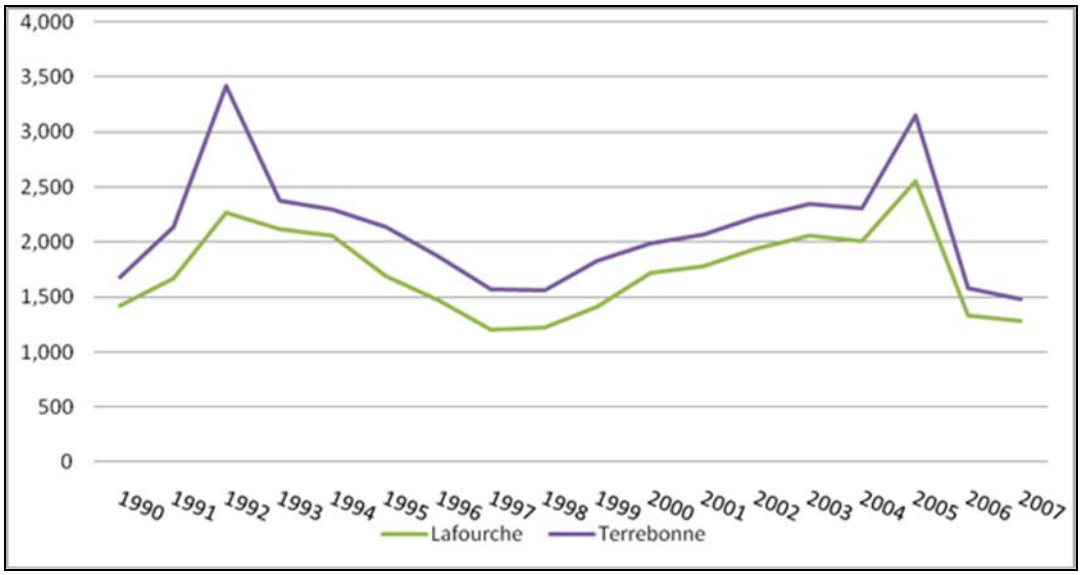

Figure 4.9. Total number unemployed in Lafourche and Terrebonne Parishes.

Source: U.S. Department of Labor, Bureau of Labor Statistics, Local Area Unemployment Statistics.

4.5.2.1. The Shipbuilding and Fabrication Workforce

As noted above, the labor force in south Terrebonne-Lafourche study area has been strongly influenced by the petroleum industry's business cycles (see Appendix 6). Fabricators and shipyards compete with onshore service industry employers, who offer jobs that tend to pay less but are less dangerous and physically demanding. Shipyard and fabrication jobs also compete with other oil and gas industry jobs, which may be equally risky and difficult, but tend to pay better (JC009 2007; SR011 2008; SR017 2008).

The 2005 hurricanes exacerbated the problems for local shipyard and fabrication shop employers. "After the storms, everything has been in short supply," said one shipyard manager. "Materials, metals, labor . . . almost all of our skilled laborers have left to take higher-paying jobs offshore," he added. "We're seeing many of our customers stealing our workers, paying them more money, and cutting us out of the process" (JC009 2007). Although many craftsmen employed in fabrication and shipbuilding make a good living, pay for working overtime hours typically allows them to do so. Truck welding has become a significant competitor for traditional shipyard and fabrication shop employment due to wage escalation. (See Section 4.5.4.3 for a more detailed discussion of truck welding.)

4.5.2.2. Alternatives for Skilled Workers

Many residents who worked primarily in welding, fabrication, ship building, and ship repair during the oil boom of the late 1970s, and who experienced the layoffs and poverty of industry busts in the early 1980s, have readily urged their children to finish high school and sent them off to college in order to obtain less physically demanding and more secure employment in fields such as computer technology, healthcare, and retail. In addition, local industries regularly compete with fabrication and shipbuilding companies for workers, and workers show some movement from shipbuilding to other industrial sectors and vice versa (SR035 2008; SR008 2008; SR029 2008). Many workers endorse livelihood shifts for their own children away from

what is often described as hot, hard, dirty, and dangerous work in shipyards or in the oilfield more generally. These workers identify professions requiring advanced education as more prestigious and secure than the physically dangerous and economically precarious work of shipyards. Thus, although oil and gas-related work (including fabrication and shipbuilding) employed more than twice as many people as did any one of the other employment sectors during the study period, retail, medicine, and education all employed significant numbers of people as well.

In 2007, oil and gas-related companies employed 11,310 people in Lafourche and Terrebonne parishes – 5,000 by Edison Chouest Offshore, 2,000 by Gulf Island Fabrication, 1,500 by Pride Offshore, 960 by Bollinger Shipyard, 950 by Grand Isle Shipyard and 900 by Danos and Curole Marine Contractors. Retail companies employed 4,900 people, 4,000 at Rouses Supermarket and 900 at Wal-Mart. Education employed 5,100 people, 2,800 by the Terrebonne Parish Public School District and 2,300 by the Lafourche Parish School Board. Terrebonne General Medical Center employed 1,300 people, and Leonard J. Chabert Medical Center employed 915. The Catholic Diocese of Houma-Thibodaux employed 1,100 people (Legendre and Lundin 2007a; Legendre and Lundin 2007b). By 2009, in Lafourche Parish, Edison Chouest Offshore had increased its workforce to 8,000, Rouses Supermarket to 5,200, Lafourche Parish School Board to 2,372, Bollinger Shipyard to 2,100, Grand Isle Shipyard to 1,500, Wal-Mart to 975 and Danos and Curole Marine Contractors to 950 (Nelson 2009). In Terrebonne Parish, by 2009, the Terrebonne Parish Public School District had decreased its workforce to 2,690, Terrebonne General Medical Center to 1,285 and Gulf Island Fabrication to 1,100. The workforce at the Catholic Diocese of Houma-Thibodaux remained the same. The Leonard J. Chabert Medical Center had increased its workforce to 977 (King 2009).

4.5.2.3. Finding Out About Work

Jobs were generally plentiful throughout fieldwork for the study and people looking for work had many options. Small shipyards, for example, reported up to 100 walk-in applicants in a month, some of whom came as referrals and others who simply knew there were many local employment opportunities. Some workers reported that they relied upon social networks to find out about available, and desirable, jobs. Once an individual established local contacts, he (and occasionally she) could use those contacts to learn about other options. A young Texan who worked for a south Louisiana shipyard that provided housing described how he learned about new employment opportunities: “People talk, so you find out what’s up. We have [company] contractors living at the [company] bunkhouse, so of course they’re going to talk and tell each other what’s up with wages and opportunities” (SR008 2008).

Employers reported to the field research team that finding qualified workers was difficult. Many employers, especially from mid-sized yards, advertise open positions in newspapers and on billboards, but it is not easy for them to gauge the success of these advertisements. Some argued that ads were unlikely to draw workers. “In our last recruitment drive that lasted three months,” a shipyard manager noted, “we did not have a single applicant from this area” (JC019 2007). Moreover, because any company seeking to recruit foreign workers must post ads, many managers and local residents considered ads perfunctory. Attempts to recruit from local high schools and GED classes in 2008 were also reported to be generally unsuccessful.

As noted elsewhere in this report, Hurricane Katrina and Hurricane Rita created enormous demand for skilled laborers to perform repairs on damaged offshore oil platforms in the Gulf of Mexico. This repair work and a spike in production also required an increase in the number of

supply vessels, which, due to the configuration of companies in the south Louisiana study area, translated into considerable work for the shipbuilding and fabrication yards there. One result of the lack of skilled workers was increased mobility among the local workers. Those with transportation who were willing to travel regularly were able, in some instances, to take advantage of wage wars as companies attempted to outbid each other to secure labor. According to area workers, it was common for a welder with his own equipment to earn $45 an hour on contract jobs and to move to a new job for an increase of even $1 an hour. While several veterans explained that such mobility was nothing new for the industry, employers and workers alike noted that the massive influx of government reconstruction and oil company monies had created an environment particularly conducive to competitive salary bidding and employee "theft." Managers at both small and medium-sized yards exhibited considerable frustration about the flight of their "top hands" to either offshore or higher-paying contract jobs. Responses varied regarding attitudes towards the mobile worker. Study participants noted that some employers held nothing against mobile workers for bettering themselves, while others gave them ultimatums, saying they could never return if they chose to leave (SR036 2008).

4.5.2.4. Establishing and Maintaining a Workforce

As noted above, attracting and maintaining a workforce has been a challenge for area fabricators and shipbuilders. Managers consistently stated that, after the 2005 hurricanes, competition had been for labor, not contracts. Area residents regularly remarked that people who wanted to work could find a well-paying job in shipbuilding and fabrication, especially after the storms, although opportunities did not always match what workers perceived to be desirable jobs. Some workers reported that they preferred the "cleaner" work of new construction to post-hurricane repairs. "Are they ALL working in the mall?" a local recruiter asked, reflecting the common perception that young people were more likely to take service jobs, even for less money, than to work in fabrication and shipbuilding (SR036 2008). The inability of companies to find sufficient employees led to an increasing reliance on foreign workers, and created new local business opportunities for labor contract firms (see Section 4.5.2.5 below).

Employers, workers, and community leaders all argued that one reason for workforce shortages was that more young people were completing high school and going to college. Certainly, the increase in educational attainment has been dramatic since the 1970s. The proportion of people who did not graduate from high school decreased from 66.5% in 1970 to 33.3% in 2000, while the proportion of people with college degrees or higher credentials increased from 5.7% to 12.3% in 2000 (see Appendix G).

At the time of fieldwork for the study, workers in southern Louisiana yards had received widely varied training, but several discernible patterns. Generally, the older workers received little to no formalized training. For workers over age 50, on-the-job training and apprenticeship with experienced hands was most common. Very few local yard workers had participated in any formal training other than a year of vocational school or a high school class. Many workers expressed pride in being able to learn on the job, by being curious and determined. Older workers emphasized knowing how to do diverse jobs around the shipyard, and they were often skeptical of younger workers who had gone to school and intended to specialize in one skill.

The fabrication and shipyards have developed their own training programs. For example, Bollinger Shipyards has a tacker training program through which new students can be paid to learn industry skills at the helper's pay rate and, upon completion of the program, immediately enter Bollinger's workforce. In addition, the companies have sought and received assistance

from state and local governments by hiring students graduating from regular programs, such as the Louisiana Technical College's welding program, or from specialized programs, such as the state Incumbent Worker Program. The companies have also targeted young people by promoting and financially subsidizing vocational-technical programs for high school students. By the end of fieldwork for this study, some area shipyards had begun advocating curricular redesign in Louisiana's technical schools to promote shipbuilding trades and to emphasize the value of becoming a skilled laborer to students as early as middle school (WWL Radio 2008).

Industry officials and technical colleges have partnered to create a streamlined process by which individuals may move directly into the workforce after their training, and industry leaders have encouraged the schools to develop certificate programs. However, formal programs like those in the technical college system suffer from high drop-out rates. Knowing the wages that can be earned in entry-level welding jobs, students often quit programs once they have developed the basic skills required by local companies, and the companies desperate for workers hire them before they have obtained certificates. If workers stay with a company, they often receive on-the-job training and can work their way up to higher, more skilled positions with better wages. A host of shipbuilding companies formed the Gulf States Shipbuilders' Consortium to alleviate worker shortages by creating a pool of trained shipbuilders capable of shifting as needed among yards in Louisiana, Mississippi, and Alabama (see Chapter 3, this volume).

Employers who had developed novel ways to address labor shortages were generally secretive about the specifics of their strategies until they had put plans into place. The strategies included starting training programs, expanding into regional markets with high unemployment rates, and moving component work outside the United States. Study participants reported that subsidiaries of LLCs regularly have "gentleman's agreements" not to compete for labor within the company, although movement among white- and pink-collar employees does occur between subsidiaries. South Central Industrial Association members had initiated a host of strategies that aligned with Louisiana Governor Piyush "Bobby" Jindal's aggressive workforce development programs for the state.

Despite the overall worker shortages, female students enrolled in area welding programs stated that gender discrimination persisted in post-hurricane hiring practices. Although men and women were enrolled in some post-hurricane classes, the young women explained, shipyards and fabrication shops were more likely to hire men (Raskin and McMahan Focus Group Notes July 11, 2008). These women claimed that managers looked at their resumes and said that they did not have enough experience.

Shipbuilding and fabrication companies have grown larger even as younger generations of locals have turned away from work in the industry—two conditions that have exacerbated workforce challenges. Management training is critical to the development of the industry especially for larger companies. Before the 1980s and for a number of years in the decade, a worker who advanced to foreman and yard superintendent could be promoted into a management track. In the 1980s, however, many of the area's larger yards began requiring managers to have college degrees. Thus, some managers received business training at local universities, such as Nicholls State, before developing practical skills working at the area's shipyards. Veteran managers expressed concern that the practice had negatively affected the managers' ability to provide accurate contract bids and perform other critical tasks.

Most foreign laborers working in south Terrebonne and Lafourche yards received training in their home countries, often through government programs. Certifications, in different types of welding for example, are regularly required by international contracting agencies. Foreign

workers also receive training through an employer or contracting company in order to do a particular job. Veteran foreign laborers can accumulate a significant amount of certifications and skills, resulting in exceptionally well-trained workers who are ready as soon as they arrive on the job.

Southern Louisiana fabrication and shipyards have been staunchly opposed to organized labor, reflecting a broader anti-union climate in the region. Field researchers discussed this situation with workers as well as employers. Some foreign-born workers reported discovering that they would be further marginalized if they attempted to organize on or off the job. In particular, study participants noted that H-2B visa workers seeking representation or advocacy from outside groups had been ostracized by area employers and labor contractors (Campbell Field Notes July 25, 2007). As a result of actions by foreign laborers elsewhere, H-2B visa workers in southern Louisiana yards were reported to have lost visa extensions and new job opportunities, bonuses, cash advances, and relief programs. Once in that position, the workers were unable to get help from other labor contract companies who feared that workers had been associating with unions and outside organizers. Thus, with few exceptions, H-2B and immigrant laborers tended to avoid seeking outside representation in an effort to maintain good standing with southern Louisiana shipyard and fabrication shop owners, and the contract companies with which they work.

4.5.2.5. Temporary Workers

Throughout the years, a significant number of international immigrants has arrived in southeast Louisiana without official documentation, and many undocumented immigrants have been employed in fabrication shops and shipyards. It is impossible to determine how many individuals fall in this category. Recently, however, employers began seeking to hire workers using temporary H-2B visas (see also Chapter 2, Volume III). Table 4.3 shows the number of H-2B visas that were requested and certified to employers requesting workers in Lafourche and Terrebonne parishes between 2000 and 2010. As indicated, the number of requests was significantly higher than the number of certifications. Table 4.4 shows the locations and job titles for visas certified to companies specializing in welding and other fabrication-related jobs during the decade, as well as those for which the requests were denied. As indicated, although employers in industries such as fishing, restaurants, and meat packing (included in the “other” category) requested and were certified to receive many workers, the rapid increase in requests by area fabricators after 2005 is striking. The rapid decline in certifications after 2008 has been attributed to a concerted effort by State Workforce Agencies to document that workers are available to fill the positions for which temporary visas were being requested (see Chapter 2, Volume III).

Table 4.3.

H-2B Visa Certifications/Requests for the Central Coastal Bend Region, 2000-2010*

Year	Construction	Fabrication	Fishing	Hospitality	Other	Sugar
1999	0/0	0/0	0/0	0/0	0/0	0/0
2000	0/0	0/0	50/50	0/0	0/0	3/3
2001	0/0	135/135	50/50	0/0	0/0	7/7
2002	0/0	16/16	760/760	0/0	0/0	7/7
2003	0/0	235/235	70/70	0/0	0/0	7/7
2004	107/107	120/120	321/321	0/0	0/0	7/7
2005	71/71	98/98	140/140	0/0	4/4	0/0
2006	670/670	2909/3459	704/779	6/6	150/300	7/7
2007	570/969	2520/8495	437/853	20/31	138/397	7/7
2008	575/575	300/6535	515/750	50/50	0/120	7/7
2009	0/0	0/2112	436/461	20/20	9/400	3/3
2010	0/0	0/485	300/300	0/10	49/239	0/0

*Includes Bourg, Cut Off, Dulac, Galliano, Golden Meadow, Houma, Larose, Lockport, Raceland, Schriever

Source: U.S. Department of Labor 2011

Note: Construction includes construction worker; fabrication includes all types of welders, pipe fitters, metal fabricators (see Table 4.4 below); fishing includes fisher, shellfish shucker, deckhand fishing vessel, and such; hospitality industry, for restaurants and hotels, includes kitchen helper, food assembler, housekeeper, and such); timber includes forest workers, tree planters, and such; and other includes everything else.

Table 4.4.

H-2B Visas Certified in Welding and Fabrication-Related Jobs in the Costal Bend, 2000-2009

Year	City	Job Type	Number Certified	Number Denied
2001	Houma	Welder, Gas	10	0
2001	Schriever	Welder Fitter	125	0
2002	Houma	Rigger Helper	10	0
2002	Houma	Welder, Gas	6	0
2003	Houma	Pipe Fitter	100	0
2003	Houma	Rigger	50	0
2003	Houma	Welder Fitter	75	0
2003	Houma	Welder, Gas	10	0
2004	Houma	Rigger	60	0
2004	Houma	Welder Helper	60	0
2005	Houma	Welder Fitter	98	0
2006	Cut Off	Fitter Helper	249	0
2006	Galliano	Ship Carpenter	70	0
2006	Galliano	Pipe Fitter	90	0
2006	Galliano	Shipfitter	90	0
2006	Galliano	Combination Welder	90	0
2006	Houma	Pipe Fitter	135	0
2006	Houma	Shipfitter	100	0

Table 4.4.

H-2B Visas Certified in Welding and Fabrication-Related Jobs in the Costal Bend, 2000-2009

Year	City	Job Type	Number Certified	Number Denied
2006	Houma	Welder Fitter	300	300
2006	Houma	Welder Helper	140	0
2006	Houma	Arc Welder	335	0
2006	Houma	Combination Welder	550	100
2006	Houma	Gas Welder	200	0
2006	Houma	Production Line Welder	0	150
2006	Larose	Pipe Fitter	30	0
2006	Larose	Welder Fitter	100	0
2006	Lockport	Welder Fitter	250	0
2006	Lockport	Arc Welder	150	0
2007	Cut Off	Welder Helper	0	450
2007	Galliano	Ship Carpenter	40	40
2007	Galliano	Fitter	450	0
2007	Galliano	Pipe Fitter	90	90
2007	Galliano	Shipfitter	90	90
2007	Galliano	Welder Fitter	540	0
2007	Galliano	Combination Welder	0	90
2007	Golden Meadow	Rigger	0	75
2007	Houma	Resistance Brazer	300	0
2007	Houma	Ship Carpenter	0	180
2007	Houma	Fitter	0	90
2007	Houma	Shipyard Laborer	0	510
2007	Houma	Pipe Fitter	0	100
2007	Houma	Shipfitter	0	100
2007	Houma	Combination Welder Apprentice	250	0
2007	Houma	Gas Welder Apprentice	260	0
2007	Houma	Welder Fitter	300	800
2007	Houma	Welder Helper	0	80
2007	Houma	Arc Welder	0	310
2007	Houma	Combination Welder	200	30
2007	Houma	Production Line Welder	0	260
2007	Lockport	Pipe Fitter	0	150
2007	Lockport	Welder Fitter	0	1800
2007	Lockport	Combination Welder	0	150
2007	Raceland	Fitter	0	175
2007	Raceland	Combination Welder	0	375
2008	Bourg	Combination Welder	0	300
2008	Cut Off	Fitter	0	150

Table 4.4.

H-2B Visas Certified in Welding and Fabrication-Related Jobs in the Costal Bend, 2000-2009

Year	City	Job Type	Number Certified	Number Denied
2008	Cut Off	Welder Fitter	150	0
2008	Cut Off	Combination Welder	0	400
2008	Galliano	Ship Carpenter	0	40
2008	Galliano	Fitter	0	35
2008	Galliano	Welder Fitter	0	20
2008	Golden Meadow	Pipe Fitter	0	50
2008	Golden Meadow	Rigger	0	85
2008	Golden Meadow	Shipfitter	0	50
2008	Golden Meadow	Combination Welder	0	50
2008	Houma	Ship Carpenter	0	30
2008	Houma	Shipyard Laborer	0	100
2008	Houma	Pipe Fitter	0	100
2008	Houma	Shipfitter	0	100
2008	Houma	Welder Fitter	0	1860
2008	Houma	Arc Welder	0	300
2008	Houma	Combination Welder	0	1200
2008	Larose	Ship Carpenter	0	35
2008	Larose	Pipe Fitter	0	90
2008	Larose	Shipfitter	0	90
2008	Larose	Combination Welder	0	90
2008	Lockport	Welder Fitter	0	300
2008	Lockport	Combination Welder	150	500
2008	Raceland	Welder Fitter	0	300
2009	Cut Off	Welder Fitter	0	100
2009	Galliano	Metal Fabricator	0	100
2009	Galliano	Combination Welder	0	100
2009	Golden Meadow	Shipfitter	0	50
2009	Houma	Fitter	0	25
2009	Houma	Metal Fabricator	0	85
2009	Houma	Pipe Fitter	0	123
2009	Houma	Welder Fitter	0	429
2009	Lockport	Welder Assembler	0	200
2009	Lockport	Welder Fitter	0	900
2010	Galliano	Pipe Fitter	0	100
2010	Galliano	Shipfitter	0	100
2010	Galliano	Welder Helper	0	170
2010	Lockport	Welder Fitter	0	75

Source: U.S. Department of Labor 2011

4.5.3. Impact of the Hurricanes (2005 and 2008)

The 2005 and 2008 hurricanes had uneven effects throughout the southeast Louisiana study area. Some residents and businesses were affected by all four storms, while others escaped significant damage from any of them. Overall, Hurricanes Katrina and Rita (2005) and Hurricanes Gustav and Ike (2008) had substantial long-term impacts on south Louisiana's communities, economy, and environment. South Terrebonne parish drew national attention when Hurricane Gustav landed at Cocodrie and when Ike washed through the region 10 days later, turning it into a crucible for testing state and federal changes in emergency response to hurricanes for the first time since the widely-criticized responses to the effects of Hurricane Katrina in New Orleans and the surrounding region in 2005. Hurricanes Gustav and Ike compounded recovery needs throughout a region whose infrastructure had not fully recuperated from the 2005 storms. As reported by local newspaper, *Houma Today*, "The parish-owned utility system received more damage from these storms than it did three years ago as the result of hurricanes Katrina and Rita" (King 2008).

Of particular concern to community leaders was the lack of resources made available to small businesses after the 2008 storms, particularly in parts of Terrebonne Parish where the impacts of those storms exceed those of the 2005 storms. Other study participants noted that certain businesses that suffered in both 2005 and 2008 were unable to qualify for special assistance after 2008 because they had not come back to their pre-2005 levels of operation and were unable to demonstrate the full magnitude of their losses.

Although many homes were lost and properties destroyed in Lafourche and Terrebonne parishes, not all of the storm fallout was negative. Many study participants pointed to the 2005 storms as a turning point for the local economy, noting that work and money continued to be plentiful even three years later as oil companies repaired damaged offshore platforms and retrofitted older vessels that were in storage to replace ones destroyed by the hurricane. In addition to the economic boon experienced in both parishes due to the offshore-related repairs discussed above, Houma became a desirable destination for out-migrating New Orleanians looking to live and work elsewhere, or to live elsewhere and commute to New Orleans as many people reportedly did. Houma proper also became a destination for some residents of low-lying areas in Lafourche and Terrebonne parishes. A small shipyard owner described why three living generations of his family moved from their residence in Dulac to Houma in 2005, following the most recent of a series of hurricanes that destroyed their homes and business: "Every hurricane that hit, we had 2 feet of mud covering up the entire location. It was wet and expensive to clean up" (SR005 2008).

As noted above, the immense tasks of repairing hurricane-damaged platforms and vessels and retrofitting stored vessels to replace those damaged translated into jobs throughout the shipbuilding, fabrication, and supply industries. *The Houma Courier* reported that jobs in the area increased by 14.9% from 2005 to 2007, while the population increased 1.7% during the same period (Scott et. al. 2008). That Houma-Bayou Cane-Thibodaux MSA surpassed Lake Charles to become Louisiana's fifth largest MSA and bucked national economic downturns during the period of this study, demonstrates the viability of the city as Louisiana's post-Katrina boomtown.

4.6. DISCUSSION

Compared to most of the other study areas, the shipbuilding and fabrication industry in south Terrebonne and Lafourche parishes developed fairly late. The industry's infrastructure gradually evolved from the shipyards and work sites of skilled craftsmen scattered up and down the region's bayous to manufacture and repair fishing vessels, rather than being stimulated by World War II construction. Nevertheless, over time, this industry has grown to be a stable and dominant force in the integrated economies of several communities within this study area. Although some of the area's larger shipbuilders carry out contracts for the U.S. government, the industry is very closely tied to the offshore petroleum industry. Local leaders have actively advocated for federal, state, and parish monies to fill wetlands, construct port facilities, and dredge canals to serve this industry.

The fabrication and shipbuilding industries remain a source of revenue and jobs, though like many of the other study areas, south Louisiana has experienced a shift from the manufacturing sector to the service sector, both in terms of the actual number of service sector jobs and the sector's proportional contribution to total employment. Unlike the other study areas, however, the overall decline in the manufacturing sector's proportional contribution to total employment has not been as severe.

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Workboat. 1976. Bollinger on the move. Workboat. January.

Workboat. 1979. Quality: A family tradition at Bollinger. Workboat. December.

Workboat. 1984b. This ‘quiet company’ just keeps on growing. Workboat. September.

Workboat. 1984c. A seismic standout from, and for, Chouest. Workboat. December.

Workboat. 1985a. Research results in a super-size, state-of-the-art multipurpose work boat. Workboat. November.

Workboat. 1985b. On contract and on budget. Workboat. October.

Workboat. 1986. The main thing is conversions and repairs. Workboat.

Workboat. 1987a. Big boat, big job. Workboat. February-March.

Workboat. 1987b. Bollinger lands second $100 million contract for Coast Guard boats. Workboat. February-March.

Workboat. 1995. Supply boat on demand. Workboat. March-April.

Workboat. 1996. Plenty of yard work. Workboat. September-October.

Workboat. 1998. General staging. Workboat. February.

WWL Radio. 2008. Garland Robinette show. New Orleans. August 8.

5. EAST ST. MARY PARISH

5.1. INTRODUCTION

The east St. Mary Parish study area is centered on Morgan City and includes the small City of Patterson, the Town of Berwick, and two Census Designated Places (CDPs)—Bayou Vista and Amelia (Figure 5.1). Together, these settlements make up the Morgan City Micropolitan Statistical Area (MSA).

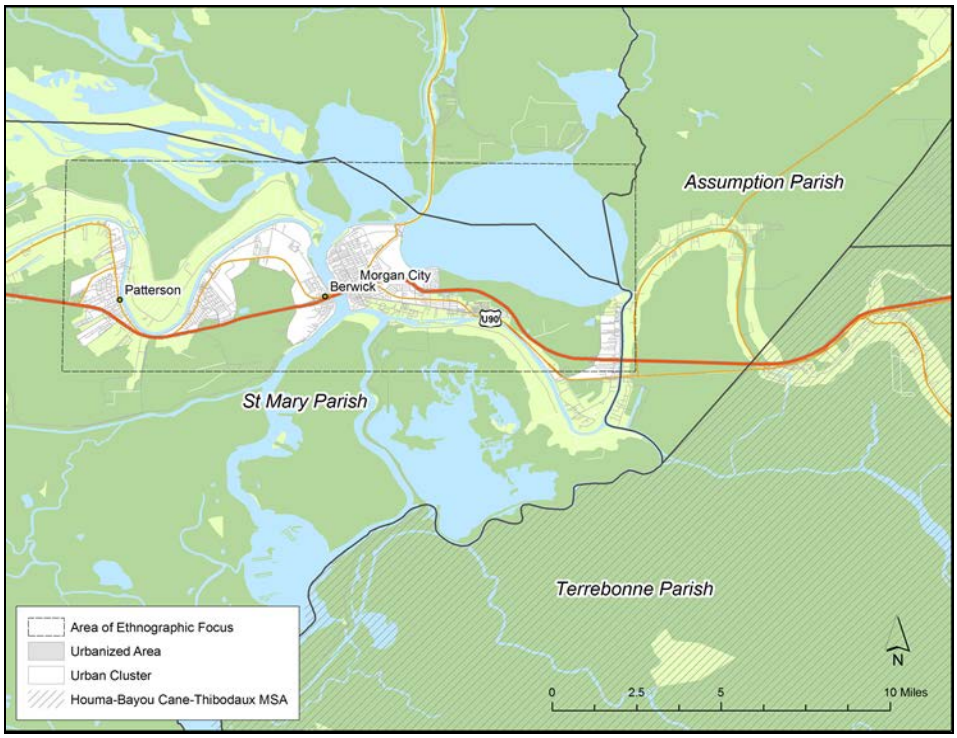

Figure 5.1. East St. Mary Parish study area.

Map was created in 2011 using data packages included with the ArcGIS software suite. Sources used to create these data layers included: ArcWorld/ESRI, National Atlas of the United States, Tele Atlas, U.S. Bureau of Transportation Statistics, U.S. Census, and U.S. Geological Survey.

Located about 50 miles south of Baton Rouge and 75 miles west-southwest of New Orleans, Morgan City is a small but vibrant community on the bank of the Atchafalaya River, with a rich history associated with sugarcane cultivation, fishing and shrimping, as well as the emergence and development of the offshore oil and gas industry, and the shipbuilding and fabrication work associated with them. This history also reflects a diversity of social and cultural influences, along with the convergence and subsequent confluence of several cultural/ethnic groups, including Native Americans; Acadian (Cajun), French, Italian, and Jewish settlers; "Texians"[11] and other southern whites; African Americans; and Chinese, Cuban, Hispanic, and Vietnamese immigrants.

[11] This is the Cajun term for any outsider, from Texas or elsewhere, who came to work in the early oilfields.

The offshore petroleum industry has been important to the east St. Mary area since the beginning of industry operations there. In 1947, Kerr McGee established the first successful oil well out of sight of land in 18 feet of water 45 miles south of Morgan City. Over the next several decades, numerous companies, offering services ranging from rig and platform fabrication to commercial oilfield diving, were formed or expanded to support the movement of petroleum drilling and production into the Gulf.

5.1.1. General Description

Located on a growing delta at the mouth of the Atchafalaya River, east St. Mary Parish is a place of great natural beauty, as the coastal wetlands and waterways teem with wildlife and plants, and also one exhibiting high levels of industrial development and production. The annual Shrimp and Petroleum Festival, an internationally-renowned celebration of the two primary economic drivers in this part of the parish, captures the seemingly paradoxical intersection of natural beauty and resources with the oil and gas industry.

While the study area's Cajun heritage and agricultural influences remain evident, residents maintain a distinct sense of individuality and identity associated with Morgan City and a shared local history that sets them apart from the rest of the parish. They frequently describe the area as "cosmopolitan" due to its rich cultural history, the diversity of its population, and the emergence of the offshore oil and gas industry in nearby Gulf waters. Workers and investors from many places have been attracted to East St. Mary Parish over the years by the tremendous value of its resources—fur, cypress, seafood, and oil and gas—and jobs created by attempts to extract and transport those resources across the United States as well as overseas. But the generation of wealth in the area came at a cost. The booms and expansions of the various industries were often offset by the cyclical contractions and downturns, leaving people who migrated to work in local industries, along with investors, in precarious positions. In addition, several aspects of local economic development led commentators and observers to characterize Morgan City as a "rough" place, especially during the boom period of the late-1970s and early-1980s. For example, the steady influx of workers looking for jobs, combined with the regular cycle of offshore hitches followed by shore time when workers had money but few "decent" pastimes, made it possible for workers to use offshore work to escape the authorities and/or personal problems.

5.1.2. Principal Ports and Key Infrastructure

East St. Mary Parish is surrounded by waterways, several of which were developed and have been maintained to facilitate transportation. The U.S. Army Corps of Engineers redesigned and deepened the Atchafalaya River during the 20th century by building extensive levees along its banks and constructing a massive water diversion structure on the Mississippi River north of the parish to provide relief for flood-prone cities and towns along the lower Mississippi Valley (Reuss 2004). The Atchafalaya River Bar Channel (formerly the Atchafalaya Bay Ship Channel), an 18-mile waterway leading from the river to the Gulf of Mexico, was first dredged in 1907 and then widened several times, resulting in a channel 400 feet wide and 20 feet deep (U.S. Congress 1910; USACE and USEPA 1997). It is now part of a congressionally authorized navigation route serving the Port of Morgan City.

Officially opened to international and domestic trade in 1957, the Port of Morgan City is situated 29 miles inland from the Gulf of Mexico, and connected to marine traffic by the

Atchafalaya River, the Gulf Intracoastal Waterway, and the Bouef, Black, and Chene bayous.[12] The Morgan City Harbor and Terminal District manages the port, and Cenac Offshore LLC operates the terminal there. The other main features are an 800-foot dock and a 20,000 square foot warehouse facility. Shallow and medium draft vessels are able to access the port's main channel, which measures 20-feet deep and 400-feet wide. Like authorities in many other fabrication, shipbuilding, and repair locations along the Gulf of Mexico, St. Mary Parish officials and port officers have lobbied to have the port channel deepened, which would allow access to deep-water vessels and, they believe, offer opportunities for further port development.

Figure 5.2. Port of Morgan City.

Map was created in 2011 using data packages included with the ArcGIS software suite. Sources used to create these data layers included: ArcWorld/ESRI, National Atlas of the United States, Tele Atlas, U.S. Bureau of Transportation Statistics, U.S. Census, and U.S. Geological Survey.

5.1.3. Current Industrial Profile

Due to the size and extent of the industrial zone where fabrication yards and shipyards are found, these installations are dominant features of both the physical and social landscapes. Using the characterization of yards based on company ownership that was developed for this study and described in Chapter 1 of this volume, this study has categorized four types of yards based on company ownership and orientation of operations. As Figure 5.3 shows, yards in east St. Mary Parish are representative of all four types: yards that service or fabricate only rigs and platforms,

[12] The Port of West St. Mary, operated by the West St. Mary Port, Harbor, and Terminal District, is an industrial site with access to railroads and the Gulf of Mexico. It lies to the west of the study area and is connected to the U.S. Gulf Intracoastal Waterway by a channel 13 feet deep.

yards that service or fabricate only vessels, yards that service or fabricate both, and small specialty shops.

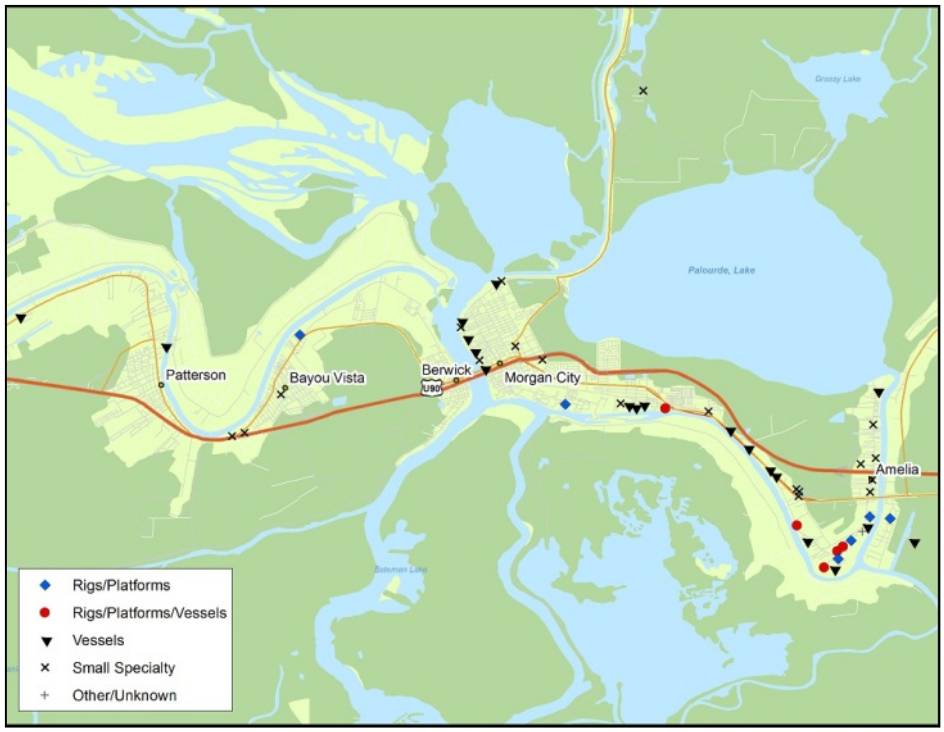

Figure 5.3. Fabrication and shipyards in the Lafourche-Terrebonne study area.

Map was created in 2011 using data packages included with the ArcGIS software suite. Sources used to create these data layers included: ArcWorld/ESRI, National Atlas of the United States, Tele Atlas, U.S. Bureau of Transportation Statistics, U.S. Census, and U.S. Geological Survey. Additional shipyard data assembled by Ben McMahan, 2008-2010, from multiple sources—primarily company websites, business directories, and ethnographic data collection

The largest yards expand and contract with industry demand and, at their peak, may employ thousands of workers, but only a couple hundred or fewer when times are lean. The ship repair and shipbuilding yards, considerably smaller than the fabrication yards, employ up to a couple of hundred workers and rely on labor contractors when additional workers are needed. By contrast, the specialty fabrication yards make highly specialized components for offshore drilling and production facilities with labor forces ranging in size from as few as 10-20 employees to as many as 100 when operating at full capacity.

5.2. HISTORY

East St. Mary Parish has been important to Gulf Coast maritime industries since the late-19th century, when Charles Morgan, a steamship and railroad magnate, first dredged a channel from the Atchafalaya to the Gulf of Mexico that was deep and wide enough to accommodate ocean-going vessels (McGuire 2006). Waterborne transportation was critical to the sugar and timber industries which dominated the regional economy at the time, but few vessels were constructed in the area. "Oil fever" was reported in Morgan City in 1900, the year of the Spindletop discovery. The first oil companies in St. Mary Parish were formed in 1901, the year oil was discovered at Jennings, Louisiana, and as they moved into wetlands and lakes they required vessels as well. Yet, the area's shipbuilding and fabrication industry emerged slowly. Although the industry's capacity increased during the world wars, its primary driver has been the growth and expansion of the offshore petroleum industry (Figure 5.4).

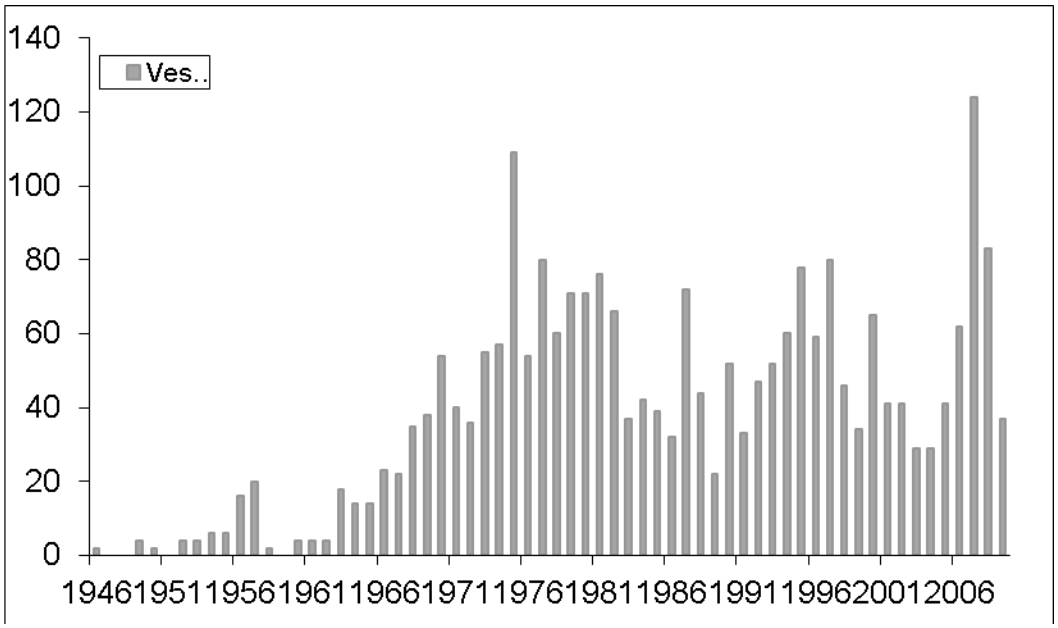

Figure 5.4. Number of rigs and vessels produced at yards in east St. Mary (Amelia, Berwick, Morgan City, Patterson), 1940-2010.

Source: Colton n.d.b.

5.2.1. Maritime and Shipbuilding History to 1945

In the early 20th century, the Morgan City Shipyard and Drydock began operations, billing itself as "the largest in Louisiana outside of New Orleans." Among its early launches was the steamboat *Sugarland* for the Southern Pacific Transportation Company. For some time, the yard remained the Morgan City area's largest builder and repairer of a variety of vessels, including barges and tugboats, although much smaller yards could be found along the Atchafalaya River (Morgan City Historical Society 1960).

During World War I, east St. Mary Parish made a small contribution to the national effort to construct hundreds of wooden oceangoing ships for the Emergency Fleet Corporation. The Atchafalaya Shipbuilding Company was established in Berwick. Seeking to capitalize on profitable government contracts, Kansas City-based Union Bridge and Construction Company also searched south Louisiana for a suitable place to build a shipyard and, after rejecting New Orleans, chose Morgan City. The city's political and business communities supported the move and assisted Union Bridge by negotiating a lease agreement with a local land owner to provide acreage along Bayou Boeuf. The shipyard began operating in 1917, but launched only a few ships before the end of the war. Although the initial lease agreement was for 18 months, its terms included an indefinite extension. Company officials intended to remain in operation and switch to constructing steel vessels, but the yard closed shortly after the war ended (Union Bridge and Iron Folder, World War I Box n.d.[a]; Union Bridge and Iron Folder, World War I Box n.d. [b]). The Morgan City Shipyard and Docking Company continued operations, but in 1920 changed owners and became the Intercoastal Shipyard, Inc. It remained the area's largest shipyard for the next few decades. During the 1920s and 1930s, the oil and gas industry was moving into wetlands and inland lakes, and the company began operating barges and dredges used by several drilling companies, including Humble Oil (Intercoastal Shipyard Folder, Industry: Shipyards Box n.d.[a]; Intercoastal Shipyard Folder, Industry: Shipyards Box n.d.[b]).

As boatbuilding technology advanced, shrimping and oyster fishing developed in the shallow lakes and bays that connect to the Gulf waters, and by the 1920s, the Morgan City shrimping industry had become the dominant economic engine in the area. Large quantities of shrimp were discovered off of Louisiana's coast in the 1930s, and shrimp was locally recognized as the major economic force for Morgan City and Berwick. Shrimping brought outsiders to the area and attracted local fishermen who built and acquired wooden boats. In the summer of 1935, acknowledging shrimp's contribution to the local economy and to capitalize on an opportunity to make money, the Gulf Coast Seafood Producers and Trappers Association held the first "Blessing of the Fleet" ceremony in Morgan City (Lehmann 1954). That ceremony would become part of an annual celebration, linking commerce and religion while calling attention to the importance of the fishermen and their industry to the region. By end of the decade, freezing houses were built to meet the needs of this expanding sector, and several new shipyards were established as well. For example, in 1938, Klonaris, a native of Greece, moved to Morgan City and opened the Klonaris Shipyard, one of the more widely-known yards, on the east bank of the Atchafalaya River. He had been in boat building for more than two decades and had previously owned a shipyard in Florida that built numerous shrimp trawlers (Conrads 1992 Folder, Shipyards Box n.d.).

The construction of shipyards, along with supply bases and other infrastructure to service the petroleum industry, committed a significant portion of east St. Mary Parish's waterfront property to industrial use. The first general oil well drilling and supply company was established on a waterfront site in the northeast corner of Berwick in July, 1940 (The Morgan City Review 1940). Moreover, canal dredging accelerated to facilitate the movement of drilling rigs and access to rigs and platforms once oil was discovered. Increased river traffic also required infrastructure improvements. Morgan City worked to accommodate the industry and to attract more companies to the region. In March 1939, city leaders from Morgan City and Berwick successfully lobbied the projects committee of the Rivers and Harbors Congress to dredge the Atchafalaya Bay Ship Channel to a depth of 10 feet; the project was completed by July of that year (The Morgan City Review 1939a; The Morgan City Review 1939b). The channel was re-dredged when city

officials convinced the U.S. Congress to designate it an emergency project, and the work was completed in 1940. With its limited land base, however, the city was faced with persistent infrastructure challenges, especially for transportation and housing.

As World War II began, Morgan City officials worked to attract military-related industries. Chicago Bridge and Iron (CBI) purchased the land, which Union Bridge and Construction Company had leased during World War I, to fulfill new U.S. Navy contracts to build and deliver all-steel floating Yard Floating Drydocks (YFD) and the much larger Advanced Base Sectional Drydocks (ABSD) (The Morgan City Review 1944). Both of these massive drydocks were to be towed to war zones for onsite repairs of damaged vessels. The company used Fools Point, a 125-foot trench on the Atchafalaya River, as a deep launching site to properly sink the drydocks during testing and load out (Theriot 2010).

CBI hired several hundred workers to begin construction of the yard and the drydocks, but because few skilled welders and fitters could be found in east St. Mary Parish at the time, the company brought most of the initial employees from outside the area. To allay concerns about outsiders "invading" the community, CBI general manager C.W. Hines announced, "Most of our steel men are married men of settled habits and fine character" (Restorer Folder, World War II Box 1 n.d.). As construction progressed, CBI created welding schools and other training programs to create a pool of skilled laborers, and workers came to the area seeking high-paying shipyard jobs. CBI's training programs proceeded smoothly, so much so that before the end of 1942 most of its initial skilled labor from elsewhere transferred to other facilities around the country, such as the shipyards in Orange, Texas. The workforce increased from 600 in 1942 to nearly 3,000 in 1944, creating significant infrastructure demands. Makeshift residential units and trailer parks hardly met the increased demand for housing, which remained a critical need throughout the war (Harper 1987; The Morgan City Review 1942; World War II Clippings 1941-1944 Folder, World War II Box 1 n.d.; The Morgan City Review 1943).

In May 1942, the yard launched its first drydock and the first YFD dock of its kind ever built, the 15,000-ton *Restorer*, with great fanfare. Dignitaries from around the country arrived, and locals stood along Bayou Boeuf for the May 23, 1942, christening ceremony—some 6,000 spectators in all. Two more YFD docks followed, each equipped with self-powered diesel-electric engines for running the cranes, tools, welding machines, and air compressors. The most impressive structures built in Morgan City were six sections of what became the *USS ABSD #5*, a massive drydock capable of lifting 100,000-ton ships out of the water for repairs. During the war, welders and fitters at Chicago Bridge and Iron fabricated drydocks of many sizes, several sections of welded steel plating for other structures, and some vessels. The Navy deployed the CBI floating drydocks to Galveston Bay, North Africa, and the Philippines to repair damaged ships. For its efforts, CBI received the Army-Navy E Award for excellence in wartime production (Chicago Bridge and Iron Yard Photos Folder, World War II Box 1 n.d.; Christ 2005).

5.2.2. Shipbuilding and Fabrication in the Postwar and Early Offshore Oil Industry, 1950-1980s

CBI closed its Bayou Boeuf facility by the fall of 1945, only months after the war's end, while the Magnolia Oil Company was expanding its operations at that location. Kerr-McGee soon leased property at the site and the industrial landscape was firmly established. As Magnolia sought to enlarge its operations, company officials recognized that the housing shortages were detrimental to their efforts to attract new employees and in late-1948 began the construction of

homes on the site. At the drilling sites, war surplus equipment was used initially to meet the demand for transportation and living quarters, but over time it was replaced by vessels and machinery built especially for the petroleum industry.

In early 1946, Dean McGee moved his company to Morgan City and purchased the first leases in the Gulf that led to successful "offshore" commercial discoveries. To explore and produce these first offshore fields, Kerr McGee pioneered the use of the fixed-platform tender, a customized version of a World War II Navy yard-freighter. The company purchased these surplus ships and converted them to drilling tenders with crew quarters, mud and pipe storage, and a galley. The company also bought three air-sea rescue boats for crewboats and a Landing Craft Tank (LCT) as a supply boat. Kerr McGee later pioneered the use of the first submersible and semi-submersible drilling vessels, which revolutionized the offshore oil and gas industry in the 1950s and early 1960s (Ezell 1979).

Around Morgan City, several shipyards emerged or changed hands in the post-war era, some specifically to support the fishing industry, some to support the offshore oil industry, and some to do both. Morgan City seafood broker Parker Conrad sold his seafood processing houses and used the proceeds to buy the Klonaris Shipyard in 1948. Conrad had some experience working with oil companies; he leased three vessels for seismographic work, but he opened the yard primarily to build wooden shrimp boats. A nearby dredging company provided a crane for diesel engine installation until Conrad purchased a sugar cane derrick with a wench to do the job. With limited equipment, the yard managed to deliver 50 shrimp boats by 1954. By that time, Conrad Shipyard had also entered the repair business by adding a drydock, and had begun to modernize its facilities (Conrad 2001; Eberhardt 2006; Conrad's 1992 Folder, Shipyards Box n.d.).

In the offshore industry's early days, oil companies leased or rented wooden trawlers and shrimp boats to conduct seismic work, and to haul men and equipment to the offshore oil and gas fields. These boats were slow and had limited deck space, the wooden hulls were not conducive to the rigors that oilfield work in salt water demanded, and wooden boats also required long repair times (Gramling 1996; Kelly 2007) As the industry moved farther offshore and rigs and platforms grew in size, the amount and size of equipment and the size of work crews grew as well, requiring bigger, faster, more durable, and more technologically advanced workboats. New England shipbuilder, Luther Blount of Rhode Island, who had built one of the seismograph vessels for Parker Conrad, introduced a cabin-forward, open-rear-deck-designed supply boat he named the "Botruc," a pickup truck for the Gulf. He modeled the Botruc on his designs for ferries and initially built four 65-foot Botrucs, marketing them in south Louisiana.[13] Several experienced boat builders from the Morgan City area saw the need for specialized crafts and soon began building steel boats to service the industry, initiating the era of modern offshore service vessels (OSVs) in the Gulf of Mexico (Gramling 1996; Austin, et al. 2004; Penney 2004).

[13] Minor Cheramie, a future owner of Golden Meadow-based L & M Botruc Rentals, bought three Botrucs in 1956 (Cheramie and Cheramie 2001).

By the early 1960s, Conrad Shipyard had abandoned wooden shipbuilding in favor of steel construction and devoted itself almost exclusively to serving the petroleum industry. For three decades, the firm launched barge after barge, mainly deck, freight, and tank barges. At its peak in the 1970s, Conrad delivered a new barge almost weekly, although a major slowdown occurred during a 1973 flood, when water covered the yard for eight months. Additional drydocks enabled the company to maintain a prosperous repair business, about half of which involved repairs on vessels serving the oil industry (Conrad's 1980s and 1990s folder, Industry: Shipyards Box n.d.; Colton n.d.b).

In the early 1950s, Sewart Seacraft specialized in building and repairing steel-hulled crewboats, and also owned two boat rental companies. Heavy steel-plated hulls slowed crewboats down, increased the amount of fuel needed for a trip as well as the time it took to get a crew out to a platform and back, so shipbuilders began using lighter, thinner steel-plated hulls to improve the speed and reliability of crewboats. However, lighter steel hulls corroded easily in the saltwater. Thus, a few shipbuilders turned to aluminum, a much lighter metal, which lasted longer and was easier and cleaner to build or repair than steel (Falgoux 2008). Fred Sewart, and his main competitor, Roy Breaux, Sr. of Breaux's Baycraft in Loreauville along the Bayou Teche, began experimenting with aluminum and built several prototypes. Sewart worked with Alcoa, while Breaux partnered with Reynolds Metal Company. Their combined efforts to design and fabricate a superior-quality crewboat made of lightweight and durable aluminum revolutionized the workboat industry.

Between 1955 and 1956, each shipyard built a small aluminum prototype. Sewart built a 26-footer and named it *Claire*. The all-aluminum welded Jo-Boat had a cabin top and was powered by a six-cylinder Chrysler outboard motor (Figure 5.5). Sewart added the new boat to his existing boat rental fleet, which worked mostly in and around the lakes and bays of the Atchafalaya Basin oil and gas fields. Following the *Claire*, Sewart build several larger 50- to 65-foot aluminum crewboats for various customers, including Tidewater Marine, Shell Oil Company, United Gas, and the Louisiana Department of Wildlife and Fisheries (Kelly 2007). A Sewart Seacraft catalog from the early-1960s illustrated the variety of sizes and evolution of Sewart crewboats from the 20- and 32-foot "All-Aluminum Jo-Boat" to the 85-foot "All-Aluminum Cargo-Personnel Transport, Completely Air-Conditioned for Year-Round Comfort.

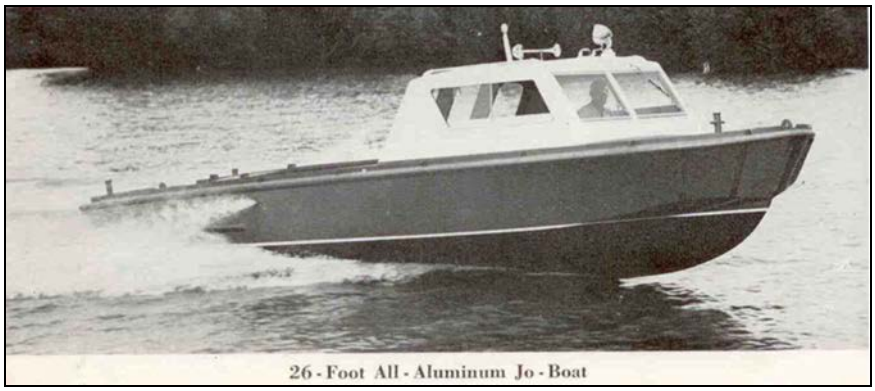

Figure 5.5. 26-foot all-aluminum Jo Boat.

Source: Sewart Seacraft, Inc. catalog, date unknown, photocopied by Jason Theriot

By the 1960s, Fred Sewart and Roy Breaux had carved a niche in the commercial market for offshore workboats, a market which had for years been dominated by the Cajun boat builders and operators down the bayous in southeast Louisiana (Falgoux 2008). Their successful experimentation and proven innovation had created demand for aluminum-built crewboats.[14]

The Sewart aluminum crewboat's success drew the attention of the U.S. military and outside investors. In 1965, during the Vietnam conflict, Sewart signed a contract with the U.S. Navy to build the "Swift Boats" for patrolling the waters of the Mekong Delta in Southeast Asia. The Navy contract expanded Sewart's operations into military vessels for both the U.S. and foreign nationals. Teledyne Movible, a California-based corporation, acquired Sewart Seacraft in 1965 and, in the late-1960s, employees at Sewart Seacraft broke away to establish Swiftships, a new shipyard in Morgan City. Tom Kelly, former vice president of Sewart's repair yard, recalled that in the wake of the controversial Swift Boat building program other boat builders—most notably Camcraft Shipyard, Halter Marine, and Breaux's Baycraft—acquired a larger share of the construction market for aluminum workboats. Moreover, Swiftships captured a sizable portion of the government contracts, mostly from foreign nationals, and eventually took over Sewart Seacraft's business when the firm closed down in 1974.

In the mid-1960s, the Swift Boat deal offered additional opportunities to Scotty Tibbs, Fred Sewart's personal pilot, who was familiar with aluminum construction and repair. He began subcontracting through Sewart Seacraft to build components, such as handrails for the Swift Boats, in addition to new Jo-Boats for Shell Oil Company. When Sewart Seacraft merged with Teledyne Movible, Tibbs opened his own shipyard, called Gulf Craft, Inc., near Morgan City in Patterson on the Bayou Teche. For the next several years, Gulf Craft built a few aluminum crewboats, but concentrated on fishing boats and passenger vessels. In the early 1970s, Norman McCall, a renowned crewboat pioneer, designer, and owner/operator of McCall Boat Rentals from Cameron, Louisiana, visited Gulf Craft and signed a contract to build a 110-foot crewboat—the *Joseph Allen McCall*—the first of many McCall boats built by Gulf Craft that propelled the crewboat industry into a new era of size, speed, and sophistication.[15]

Service Machine and Shipbuilding Corporation was another Morgan City yard that served the oil industry (Fernandez 2009). It began operations in 1956 when Beverly H. Fernandez and Carl Porth, friends and diesel mechanics, opened a shop to provide welding and engine-repair services in downtown Morgan City. With the firm's customer base steadily increasing, Beverly bought out Porth and added his two younger brothers, Julian and B.C., as co-owners. The company expanded into shipbuilding and repair at a new location on the Intracoastal Waterway near McDermott's facility in 1966. Within a few years, it became a major builder of offshore steel tugs, utility boats, barges, jack-up drilling rigs, and floating drydocks. Its anchor-handling tugs served the Gulf and the North Sea petroleum markets (Sunday Advocate 1978; Fernandez 2009).

[14] Roy Breaux, Sr. started one of the area's first shipyards in support of the oil and gas industry. In the late-1940s and early-1950s, Breaux began building 30-foot flat-bottom *bateaus*, commonly known as a "Jo-Boat," and small workboats for oil companies to traverse the oil fields in the Atchafalaya Basin and surrounding wetlands. He used his knowledge of the basic flat-bottom design, his welding experience gained from building Navy ships at Avondale Shipyard during World War II, and later founded Breaux's Baycraft, Inc, becoming a pioneer in aluminum crewboat construction (Breaux 2007; Breaux and Breaux 2007).

[15] Norman McCall grew up on Grand Chenier in southwest Louisiana during the 1920s in a family of boat builders and operators. After spending time in the Navy during World War II and then working as a captain aboard a converted ex-minesweeper owned by Pure Oil Company to support construction of the Gulf of Mexico's first offshore oil platforms, McCall went into business for himself, designing and renting workboats (McCall 2007; Tibbs 2007).

Before the end of the 1970s, Service's workforce had more than 350 employees, many of whom arrived daily from several nearby parishes on company-owned or leased buses and vans. By offering high wages and excellent benefit packages, the company lured workers from nearby McDermott. Service Machine ran its own training facility, which enrolled both men and women, including recent immigrants from Vietnam whose understanding of the French language made their transition into the French-speaking Cajun community less complicated.

Service also made a great effort to recruit skilled management from other shipbuilding and fabrication companies. Former employees of Sewart Seacraft and Avondale joined Service and helped to build large vessels, such as North Sea anchor-handling tugs and large offshore supply vessels. Officials and welders from Avondale also introduced the company to such practices as flux-core welding and modular construction concepts that reduced vessel cost and delivery times. Joe Ruffin, who helped develop the pre-fabrication method of building offshore platforms as an engineer at McDermott, joined Service and was instrumental in the company's expansion into offshore platform fabrication.

By the 1970s, Louisiana's workboat industry became nationally and internationally well-known. For example, in the mid-1970s, Service Machine built and sold a 110-foot ocean-going tugboat for $2.2 million to a company in Oregon that owned one of the largest drydocks on the West Coast. "They said the technology in this area is superior," a representative from Service stated in a 1979 article, "our workboats have proven themselves in the oil patch for decades." By the late-1970s, the region became known as the "Work Boat Capital of the World" (Acadiana Profile 1979). A report in the mid-1970s noted that some 6,700 workboats plied the Gulf waters and shipyards in Louisiana produced nearly $1 billion in workboats annually. According to the Harbor and Terminal District in Morgan City, in 1974 alone workboats made more than 100 trips daily through the Atchafalaya Bay. By one account, "We estimate that there are about 550 major vessels—supply boats, tug/supplies, tug/utility, lay barges and so on—in the Gulf at any one time. But there are also a lot of little guys." A 1977 study of the Morgan City area showed that about 1,500 people were employed by the marine transportation industry.

As the petroleum industry moved farther offshore, it also required larger and more substantial structures, and east St. Mary Parish soon developed as a center for the fabrication of offshore platforms. In 1948, two brothers, E.W. and A.P. Dupont, started a small fabrication company at the Mobile Oil site in Morgan City to build oil tanks and platforms for the oil company. Dupont Fabricators expanded their business to a new yard in Amelia and began building offshore equipment for Shell, Texaco, and Kerr McGee. The company also purchased a pipe rolling mill for its business. In 1959, the company sold its facility to fabrication pioneer J. Ray McDermott.

J. Ray McDermott was founded in 1923 by father and son team J. Ray and R. Thomas McDermott. The company started as a contractor building wooden derricks for oil wells in east Texas. Throughout the early years, McDermott remained focused on the oil industry, but expanded geographically across Texas to Morgan City. In 1947, McDermott entered the offshore oil business when it constructed a wood-piled platform in 20 feet of water in the Gulf of Mexico. The company also built its first derrick barge in 1949 from refurbished World War II materials and later began building concrete platforms (Offshore 1958; Reference for Business 2012).

In 1955, Harry Aldman and J. Ray McDermott were in business together importing ships when they opened a new fabrication yard in Amelia exclusively to build offshore steel structures. Located along Bayou Boeuf and initially named Bayou Boeuf Fabricators, the company officially became McDermott Fabricators in 1958, the year that the yard completed the second of two 252-foot ocean-going deck barges. The following year, the company expanded its Amelia

operation with the purchase of Dupont Fabricators and the creation of a marine department to repair company equipment—and that department quickly evolved into McDermott Shipbuilding.[16]

The 1960s was a productive decade as the company continued to fabricate offshore platforms and its shipyard was busy launching tugboats and OSVs. In 1961, the company completed its first pipelay barge and installed the first "stacking" jacket, a forerunner to multi-piece jackets. The company also entered a period of international expansion. By 1963, the company had several subsidiaries: McDermott Far East, McDermott Overseas, McDermott Enterprises France, and Oceanic Contractors. By 1964, McDermott had eight subsidiaries under five divisions. Mergers, acquisitions, and reorganizations regularly occurred throughout the company's history (McDermott International, Inc. 2011; McDermott International, Inc. 2011).

As the offshore industry moved into deeper water, McDermott followed with additional innovations, larger equipment, and record-setting platforms. In 1965, it built the first of several derrick barges with 500-ton lifting capacities. Two years later, it introduced the practice of launching jackets by fabricating them onshore on their sides, then floating them out to the desired drilling and production site, where jackets were slowly ballasted and installed upright. In 1967, the company signed on with Shell to build four of the largest drilling platforms ever fabricated for deepwater drilling operations. These structures were designed to operate in 340 feet of water, a record depth for the industry (Offshore 1967a; Offshore 1967b). McDermott also expanded internationally by acquiring both Hudson Engineering Corporation and the foreign marine construction equipment business from Ingram Corporation. The latter acquisition expanded its operations to Brazil, Trinidad, and Australia (McDermott International, Inc. 2011).

McDermott led the marine fabrication boom throughout the 1970s. It expanded its facilities and invested $50 million in new equipment. The company built a new 400 foot by 800 foot workshop at its Morgan City yard designed to minimize exposure of equipment and personnel to the elements (Offshore 1968; Offshore 1971a). McDermott also reorganized its Gulf Coast operations, with four divisions making up the Morgan City Division Group: McDermott Fabricators Division, McDermott Offshore Division, McDermott Shipyard Division, and Harvey Supply Co.[17] A few years later, it opened a second shipyard in nearby New Iberia to meet the increasing demand for OSVs.

In the summer of 1976, McDermott recorded its largest backlog in company history, and the firm prepared its facility and its workforce for a big push into "deepwater." In 1976, the company participated in the design, fabrication, and installation of Exxon's massive *Hondo* platform in 850 feet of water off the California coast (Offshore 1972; Offshore 1976). Around the same time, McDermott expanded its skids to 1,000 feet and built the 955-foot *Cerveza* platform for Union Oil, followed by the smaller, *Cerveza II* (Offshore 1979; Offshore 1981a).

In 1975, McDermott contracted with Shell to build a monumental production platform—*Cognac*—the first platform installed in water depths greater than 1,000 feet. Shell determined that only McDermott had the facility, equipment, and experienced welders to successfully complete this historic project. The infrastructure to build it in one piece did not exist at the time, so McDermott upgraded its yard and built the platform in three separate pieces. The platform had to be large and strong enough to accommodate two drilling rigs and 62 wells, and withstand

[16] The company initially chose the name Bayou Boeuf Fabricators to avoid potential embarrassment should the company fail (Offshore 1958; Reference for Business 2012).

[17] The reorganization also included its Harvey division: McDermott Marine Pipeline, McDermott Dredging, McDermott Inland Service, and Dick Evans Divers (Offshore 1971b).

hurricane-force waves. The revolutionary project required a different approach to design, management, measurement, fabrication, and installation. New tools, equipment, and processes had to be created that pushed the limits of engineering and construction at McDermott. Installation of *Cognac* began in 1977 with the base section, followed by the mid-section in 1978, and the final top-side deck in 1979 (Priest 2007). The experience with *Cognac* helped the company when it had the opportunity to test even deeper waters and bigger projects in the 1990s.

The impacts of fabrication and shipbuilding spread as the industry grew to become a dominant feature of east St. Mary Parish. These impacts included both visible effects, such as housing shortages and traffic on roads, and invisible ones, such as the need for a specialized workforce. In the 1950s, St. Mary Parish civic and business leaders, recognizing the need to expand the area's infrastructure, created the Morgan City Harbor and Terminal District. To facilitate domestic and international trade, the Port of Morgan City opened on the Atchafalaya River in 1957 (McGuire 2006; Port of Morgan City n.d.). McDermott helped start a new subdivision in Morgan City by financing the construction of several houses and then later selling them to company employees. Morgan City and St. Mary Parish developed training programs to provide the specialized workers needed by the industry.

By the 1970s, McDermott, along with several other firms, including Sewart Seacraft, Swiftships, Conrad Industries, Service Machine, and a small division of Avondale Shipyards, had built up a mature fabrication and shipbuilding industry with a sizable workforce. Because the area's shrimp processing facilities had closed by this time, the area had become almost completely dependent on the offshore oil and gas industry (Gramling 1996). The fabrication yards and shipyards continued to compete for welders and skilled technicians, and trade schools were opened to help meet the oil industry's growing demand. In 1959, the Gulf Area Vocational-Technical School in Abbeville opened a branch in Morgan City and, in 1961, the school acquired a surplus cargo vessel, built in 1943 for the U.S. Army, for its nautical training program (American Vocational Journal 1961). The school moved to several locations during its early years until it found a permanent home on property donated by the Young family in 1965. The school's curriculum was directly tied to the petroleum industry, with specialized programs in welding, diesel mechanics, and nautical services as examples of training created to meet the needs of local businesses.

Although work on offshore platforms was still largely unavailable to non-whites well into the 1960s, as increasing numbers of white workers moved to lucrative offshore jobs they freed up positions in onshore fields, fabrication yards, and service companies. High labor demand led to numerous campaigns to attract workers to the region, and the rapid influx of newcomers, along with a general rise in drug use and specific industry practices, such as the creation of labor camps (Higgins 2005), raised concerns among many local residents. Though the newcomers' labor was much needed on the area's yards, vessels, rigs, and platforms, newcomers were not accepted as members of the communities in which the labor camps were located. In addition, although none of the efforts to organize workers during this period were successful for any length of time, several attempts were made in sectors related to oil or gas exploration, development, and production, including an attempt by McDermott employees in the 1970s.

5.2.3. Downturn of the 1980s

The offshore industry boom extended into the early-1980s: 130 new platforms were installed in 1981 and 143 were rigs working (Offshore 1981b). R.E. Howson, then president of McDermott Marine Construction, predicted, as did many others, that the 1980s "will be a decade

of growth for marine construction" because of a worldwide desire for energy independence, high oil prices, increasing global demand for petroleum products and natural gas, "decontrol" in the United States, and President Ronald Reagan's plans for acceleration of offshore leasing (Offshore 1981c). Industry officials were not the only ones to be caught off guard. "Outer Continental Shelf Impacts, Morgan City, Louisiana," a 1977 report prepared by the University of Southwestern Louisiana, concluded: "Given the need for domestic petroleum, the relatively inelastic demand for petroleum and natural gas, the many alternative uses for crude oil, and the dependence on petroleum for transportation, it is unlikely that the Morgan City economy will suffer in the near-to-medium term" (Gramling and Joubert 1977).

Yet signs of a slowdown surfaced at the end of 1981 and, although the "bust" took several years to play out, by the mid-1980s it was clear to all those involved that the industry was experiencing more than a typical down cycle (McKenzie, et al. 1993; Seydlitz and Laska 1994). The downturn's impact downturn was almost immediate, and it had a prolonged effect on businesses in St. Mary Parish and the surrounding areas (Neuville 2007). Some companies were able to remain viable due to forward thinking management, the sheer size and inertia of their operations, or just plain luck. As opportunities became available, companies frequently chose to diversify their businesses by fabricating non-marine industrial components such as power plant modules or, depending on the company's size and capacity, by specializing (see Chapter 3, Volume III).

Fabricators and shipyards downsized and diversified in order to withstand the fallout. For example, the family-owned shipyards along Bayou Teche and Bayou Boeuf kept active by diversifying into non-oil field commercial markets for fishing and party boats, and many of these shipyards also began doing repair work. Firms such as Gulf Craft and Swiftships purchased surplus crewboats and converted them to recreational vessels to market on the East Coast. Nevertheless, the Gulf oil fields did not shut down completely, allowing some companies to remain afloat and others to survive by finding contracts outside the oil field. Consequently, the 1980s were characterized by changes in individual company practices as well as in the organization of sectors and the industry overall.

Like many others, Service Machine and Shipbuilding Corporation expected the boom of the late-1970s to continue. It had recently expanded into Terrebonne Parish along Bayou Black near Avondale's fabrication yard. The Bayou Black yard was designed to fabricate jackets and other structures for deepwater use. It housed a pipe rolling mill for Service Machine projects and for outside customers. However, the Bayou Black yard operated for only a few years and, by 1983, the company's workforce had dropped to about 50 employees. Service Marine changed hands three times during the 1980s. The Fernandez brothers sold the firm, which for a time ended up in the hands of two Service Machine executives, Tom Hensley and Dan Duplantis. In 1986, it became Service Marine Industries. Repair work and conversions, including reconfiguration of six workboats into king crab boats for Bering Sea fishing grounds, kept the firm going while Hensley and Duplantis diversified into the excursion and cruise-ship market. A breakthrough occurred after Service Marine developed a modular design for boats from 75 to 100 feet and pitched the venture to excursion boat operators around the country. Hensley recalled, "We began in Florida and worked our way up the coast, calling on every excursion boat operator we could find . . . We put a salesman on full-time to make the calls. Almost all were cold calls since we had never worked this market and no one knew us." The promotion worked and Service Marine launched its excursion boat in 1987 to Florida-based Seguro, Inc. The company also moved to

capitalize on the potentially lucrative market to satisfy the country's increasing interest in gambling by designing riverboats and floating casinos (Workboat 1986; Workboat 1993).

A late-1970s expansion also enabled Conrad Shipyard to ride out the tough economic times of the 1980s (Conrad 2001; Conrad's 1980's and 1990's Folder, Shipyards Box n.d.). For three decades, the former fishing-boat builder had become completely dependent on the offshore oil industry for business. In 1978, Conrad expanded with a 3,600-square-foot indoor-construction facility, 150 feet of additional bulk-headed waterfront along the Atchafalaya, and additional automatic welding equipment. What seemed to some as a risky and unnecessary $1 million investment enabled Conrad to diversify and to survive the difficult times ahead. Conrad later remarked, "The indoor facility turned out to be even more of a blessing than I thought it would be. It allowed us to do things we wouldn't have been able to do if we'd remained on a smaller, less sophisticated scale. For a time, it kept us alive" (Conrad's 1980s and 1990s Folder, Industry: Shipyards Box n.d.).

Still, at the height of the downturn, employment at the shipyard dwindled from 100 to 30 workers. The company, which had previously launched one barge per week, built no more than 15 vessels annually. The slowdown prompted Conrad to increase repair work, aggressively bid on new construction jobs in other industries, and expand the company's customer base across the United States and abroad. As a result, Conrad became south Louisiana's primary builder of drydocks for ship repairers in the United States. It built drydocks for such companies as Superior Marine Ways in Ohio, Cadell Dry Dock and Repair Company on Staten Island, New York, the Missouri Drydock and Repair Company in St. Louis, and the Union Dry Dock and Repair Company in Hoboken, Jew Jersey. It also delivered an automobile ferry for Mobile Bay Ferry of Pensacola and a dinner cruise ship for Corpus Christi (Workboat 1988; Colton n.d.b).

Morgan City's proximity to the Gulf positioned Conrad for additional markets in the Caribbean and Central and South America. The company built a drydock for the Naval Dry Dock of the French West Indies and a dual-mode drydock and barge for the Republic of Venezuela. Company officials traveled to the Bahamas to secure contracts for Nassau-based tourist industries. Conrad lengthened by 40 feet the inter-island supply boat *Bahama Ranger* and launched the *Majestic Lady*, a 300-passenger catamaran, during the downturn (Workboat 1987; Conrad's 1980 and 1990s folder, Industry: Shipyards Box n.d.).

The large marine fabricators had fewer options for alternative commercial markets, and the collapse of the petroleum industry forced them to make dramatic changes. Despite completing several platforms during the 1980s, McDermott's labor force shrunk, and it closed its New Iberia shipyard. The company would not realize a profit until the early 1990s (Offshore 1981c; Offshore 1981d; McDermott International, Inc. 2011). Still, managers envisioned the deepwater era, and the company added 200 acres in Morgan City to accommodate future deepwater projects as well as enhanced its automation and computerized modeling (Offshore 1985). A 1989 report noted that McDermott, one of only a few larger construction firms still operating on the Gulf Coast, was focusing its current and future operations on deepwater and topsides for tension leg platforms (TLPs). At the end of 1989, McDermott, in response to new deepwater drilling by Texaco, BP, and other companies, increased its workforce from a low of 500 at mid-decade to 1,100 (Offshore 1989a; Offshore 1989b).

5.2.4. Deepwater Gulf of Mexico, 1990s to 2008

For many Louisiana shipyards and fabricators, the 1990s offered a welcome return to some measure of prosperity. Activity offshore gradually increased with the opening of new deepwater

acreage off the Outer Continental Shelf, with the advent of new technologies such as 3-D seismic, and with major new discoveries in water depths that were previously inaccessible. This movement into deeper waters, in conjunction with the aging workboat and rig fleet, resulted in demands for new and/or bigger workboats, larger and more sophisticated platforms, and upgraded or refurbished drilling rigs. This increased demand meant that east St. Mary Parish fabrication and shipyards would again face acute labor shortages because a number of skilled workers had transitioned away from the industry, by choice or after layoffs, and young people were turning to other occupations (Henry and Bankston 2002).

Conrad Industries experienced growth during the 1990s that continued into the 21st century. Repair work increased and construction of a wide variety of barges picked up, as Conrad returned to pre-1983 employment levels. In 1994, Parker Conrad stepped down as president and CEO, naming oilfield veteran Bill Hidalgo as his successor. Under Hidalgo's leadership, the company underwent a major period of expansion. In 1997, it acquired Orange Shipbuilding Company of Orange, Texas, which included a 140,000-acre yard on the Sabine River (see Chapter 6). The following year Hidalgo reorganized Conrad Industries into a public holding company. Conrad also opened its first of two repair and conversion yards in Amelia, financed by a parish-issued industrial bond and a grant from the state. Because of excessive silting in the Atchafalaya River, Conrad shifted much of its work to Amelia.

As Conrad expanded during the 1990s, finding skilled workers became more difficult. In an effort to satisfy labor needs, the company partnered with Young Memorial Technical Institute in Morgan City and the St. Mary Parish School Board to promote curriculum changes that would help create a stable pool of welders and fitters. Conrad's vigorous recruiting efforts and continued diversification of its customer base paid dividends. The company moved into both the commercial and government markets. In addition to barge construction, Conrad delivered lift boats, pushboats, towboats, tugs, workboats, and patrol boats for foreign clients (Funding Universe n.d.; Daily Review 1995a).

Innovative ideas, market demand, and economic survival drove pioneers like Roy Breaux, Fred Sewart, and Norman McCall to develop the technology that has become widely used throughout the offshore oil industry. Their efforts to design, build, and market a new type of vessel for the industry have continued through the second and even third generation of aluminum boat builders along the Bayou Teche.[18] Swiftships in Morgan City has continued along the path set by Fred Sewart in building aluminum workboats for customers such as Candy Fleet and, most notably, aluminum patrol boats for the U.S. military and other countries.

Gulf Craft and McCall Boat Rentals grew into one of the leading owner-builder partnerships in the workboat industry, with the second generation of boat builders guiding each company, respectively, over the last decade. In 1994, Norman and Joe McCall merged their family business with SEACOR International. The "McCall crewboats" can now be found working around the world. McCall's innovations and Gulf Craft's engineers and boat-builders have continued to transcend the crew/supply boat industry. These vessels evolved from the small 65- to 85-foot crewboats of the 1960s to the 110-foot multi-screw crewboats capable of transporting dozens of personnel, fuel, and water to offshore worksites in the 1970s. Today's vessels, such as the high-

[18] In 1982, Ward and Vance Breaux, sons of Roy Breaux, Sr., along with their oldest sister, Joan, left their father's shipyard to start a new aluminum boat business, Breaux Brother's Enterprises, and began building recreational and fishing vessels for the East Coast market. They entered the crewboat market in 1987 and became a major aluminum crewboat builder for two decades. Roy Breaux Sr.'s youngest children, Roy Jr. and Royce, took over Breaux's Baycraft when their father passed away in 1991 (Breaux 2007, Breaux and Breaux 2007).

speed 190-foot *John G. McCall*, a five-engine crew/fast supply vessel (FSV), have become extremely high-tech and are equipped with dynamic positioning (DP2 rated); water-jet propulsion systems; internal and external tanks to haul large quantities of liquids, mud, and bulk cargo; hydraulic equipment to pump the products up to the offshore facilities; and seating space to transport 36 offshore workers on regular 200-mile trips to the ultra-deepwater worksites (see Figure 5.6). In 2007, Gulf Craft delivered to McCall/SEACOR the *Seacor Cheetah*, a truly revolutionary 165-foot high-speed catamaran crewboat with the capacity to carry 150 passengers at speeds over 40 knots (Pearson 2007-2008; MarineNews 2007).

Figure 5.6. The John G. McCall.

Source: Jason Theriot.

Riverboat construction surged to supply not only an increase in demand for new offshore workboats, but also a burgeoning travel industry on America's inland waterways (Offshore 1994). After several states legalized gambling on floating casinos, south Louisiana became the epicenter of riverboat and casino-barge building. Service Marine initially led the way since it had already entered a new market with excursion boat jobs, which the company continued to pursue. A resolute marketing campaign enabled the company to transition into riverboat construction. In the early 1990s, the company secured several profitable contracts from gambling companies. No southeast Louisiana shipyard during the 1990s built and converted more casino boats for the riverboat gambling industry than Service Marine. Employment surged at the company to about 350 workers and Service added an additional facility and drydocks. While it constructed vessels for the entertainment industry, the company also returned to its roots and launched several workboats for oilfield service companies. But before the end of the decade, Service Marine faced increasing financial difficulties. What appeared to be a thriving, successful business declared bankruptcy in 1999 (Daily Review 1995b; Colton n.d.a). Bollinger purchased the yard shortly thereafter.

In the early 1990s, McDermott led the fabrication industry with multiple contracts for large deepwater projects, in addition to its many offshore pipelaying projects. With major discoveries in water depths greater than 2,000 feet, oil companies looked to new technologies to make this

new offshore frontier a reality. Shell chose TLPs for its first deepwater developments and contracted with McDermott to build the topside modules for these revolutionary drilling and production systems. The Shell *Auger* TLP project, the first of its kind in the Gulf of Mexico, added 600 jobs to McDermott's Amelia operations, boosting employment to about 1,500 in 1990 (Offshore 1990). The Shell *Mars* TLP project followed three years later. *Mars*, a joint venture between Shell and BP to drill at just under 3,000 feet of water, set a record depth for the Gulf of Mexico (Offshore 1993). The enormous costs and time-to-completion for these massive deepwater projects challenged the management and project leaders at both McDermott and Shell, ultimately leading to a new contracting approach and a new business model that would become a key component for successful project development in this new expensive deepwater vista. McDermott built the topsides for Shell's *Ram-Powell* TLP in 1995.[19]

On January 31, 1995, McDermott International Inc.'s marine construction services business and Offshore Pipelines, Inc. merged to form J. Ray McDermott, S.A. Through the late-1990s, McDermott remained active along the Gulf Coast, building topsides for a Chevron Spar platform and Texaco's *Petronius* compliant tower,[20] and fabricating and installing in the Gulf the topside modules for BP's *Holstein*, *Mad Dog*, *Atlantis*, and *Crazy Horse* developments, and, in 2001, Shell's *Brutus* TLP (Offshore 2001; Offshore 2003). McDermott Shipyard also delivered the *American Queen* to Delta Queen Steamboat Co., the largest passenger vessel built in a U.S. shipyard since the 1950s. Still, by the end of the decade, the company was experiencing the effects of the late-1990s slowdowns in the offshore industry. In August 2000, McDermott employees at the company's Amelia yard joined the International Union of Operating Engineers, Local 406. The union did not survive the layoff of nearly one-third of the fabrication workforce the following year.

5.3. FABRICATION AND SHIPBUILDING IN THE CONTEXT OF OTHER OCCUPATIONS AND INDUSTRIES

Fabrication and shipyards of east St. Mary Parish have benefitted from the close proximity of their base of operations to what began as the center of the Gulf of Mexico offshore industry. As noted above, companies in this area specialize in the construction of OSVs and the fabrication of platforms. The large fabrication facility engaged in the production of platforms, decks, jackets, and other infrastructural components supports numerous small specialty fabrication shops that produce niche market components. As the industry has shifted overseas, some companies have expanded their operations accordingly, while others have been unable to do so. Large fabricators, such as McDermott, have opened yards across the globe, drawing some employees from the study area and hiring from their new localities as well. As is the case in other study areas, many of the companies that once constructed new vessels, platforms, or components have in recent years focused more extensively on repair.

East St. Mary Parish is also home to other sectors of the offshore petroleum industry, such as service companies that support the installation and operation of rigs, platforms, and vessels and transportation companies that move people and materials on roads and waterways. These companies provide alternative sources of revenue and employment to the large-scale fabrication yards or shipbuilding companies in the region. In addition, many residents work for the

[19] Shell's partners for Ram-Powell included Amoco and Exxon (Offshore 1995).

[20] During installation, a cable on the McDermott derrick barge snapped and module for the platform broke off and sank to the bottom (Furlow 1998).

petroleum companies and their contractors. The cyclical nature of all offshore employment exacerbates the ongoing search for workers in all sectors, supporting an influx of job seekers from both within and outside the region and making it difficult to track why people choose one over the other.

Though commercial fishing is no longer a dominant occupation in the region, some people still make their living harvesting fish and seafood, and Morgan City ranked among the top 50 U.S. commercial fishery landings with regard to seafood quantity (see Table 5.1).

Table 5.1.

Commercial Fishery Landings in Morgan City

Year	Quantity (million pounds)	Value (million dollars)*
2010	5.9	5.7
2009	5.4	5.7
2008	6.0	4.3
2007	13.7	5.3
2006	10.2	3.8
2005	17.7	7.2
2004	17.8	6.6
2003	17.4	6.2
2002	25.6	8.3
2001	23.3	10.0
2000	20.2	10.6
1999	137.0	16.0
1998	158.6	17.8

*Note that value varies by species, so there is no direct correlation between quantity and value.
Source: National Marine Fisheries Service (NMFS) n.d.

5.4. INFLUENCE OF THE INDUSTRY ON THE PHYSICAL FEATURES OF THE REGION

East St. Mary Parish, located at the confluence of the Atchafalaya River and the Intracoastal Canal and bisected by numerous bayous and channels with easy access to the Gulf of Mexico, provided the land-water interface necessary for the growth and development of critical elements of the region's fabrication and shipbuilding industry. The shipyards are clustered in two primary locations. The first cluster runs along the Atchafalaya River and Cut-Off Canal starting in downtown Morgan City and extending to the east until, and then past, the edge of Morgan City proper. The second cluster, down in Amelia, runs along nearly every stretch of land with water, canal, or bayou access. In effect, Amelia acts as the industrial center for Morgan City, with much of the heavier industry and larger fabrication facilities being congregated there (Figure 5.7).

A number of businesses, both active and long-moribund, line old Highway 182 between Morgan City and Amelia as well. These include a number of smaller shipyards and a couple of salvage and scrap steel breaking operations, along with equipment rental and supply servicing companies. This stretch of road also makes visible the cyclical nature of the local economy: a

number of buildings that once housed businesses long since departed also line the road as a sort of monument to past endeavors. A number of other support or tangentially-related businesses can be found close by, including equipment rental, crew servicing, crew and supply boat fleets, and maintenance and upkeep servicing facilities (for both onshore and offshore applications), extending along the winding highway all the way to New Iberia.

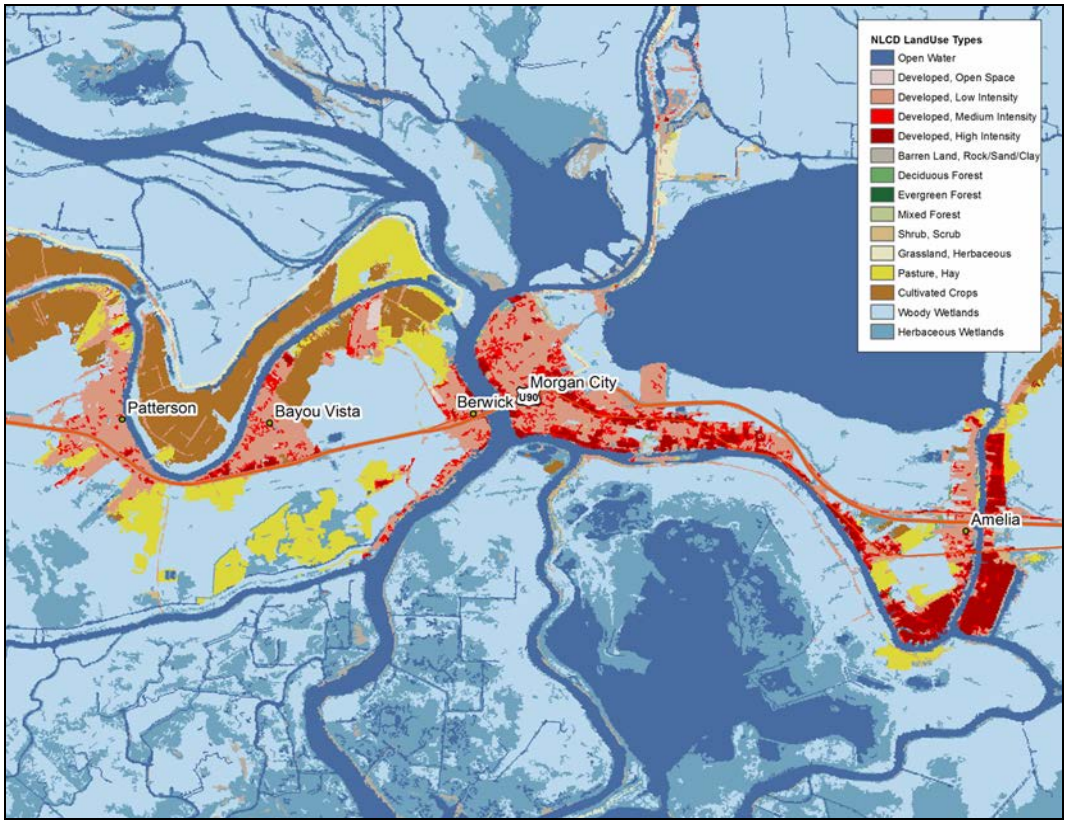

Figure 5.7. Land Use Classifications from the 2001 National Land Cover Dataset (NLCD) for St. Mary Parish.

Source: Multi-Resolution Land Characteristics Consortium 2001.

In Morgan City, community zoning and the distribution of industrial, residential, and commercial properties is relatively obvious, although there is some overlap, especially near the downtown shipyards where local yards pay for car cleaning of residents who live nearby and are affected by overspray. Amelia stands in sharp contrast, where mobile home parks or small neighborhoods lie directly across the street or immediately next door to the industrial yards. The larger fabrication yards are separated, located farther down the main road away from the residential and commercial sector on large tracts of land. During fieldwork for this study, some of the yards had housing facilities, especially those that were sponsoring H-2B visa workers who lived and worked onsite.

5.4.1. Waterways, Roadways, and Airports

This area is served by numerous waterways, a relatively new highway, several old highways and roadways, and the Harry P. Williams Memorial Airport in Patterson. Morgan City is approximately equidistant from the airports in New Orleans, Baton Rouge, and Lafayette.

Most of the area's fabrication and shipyards lie outside the ports along the major waterways. The area has not suffered the steady loss of wetlands due to coastal erosion, but the continuously- building Atchafalaya Delta and the sediment or "fluff" present in the waterways create their own problems. When the Atchafalaya River enters the Gulf of Mexico at the Atchafalaya River Bar Channel, the fresh water of the Atchafalaya mixes with salt water of the Gulf, causing the fine sediments carried by the river to flocculate and settle to the bottom, thus reducing channel depth. Annual dredging requirements for Atchafalaya River Bar Channel range from about 9 to 11 million cubic yards (Engineering Research and Development Center 2007). The steady accumulation of sediments has negatively affected the maritime industry and blocked access to some of the area's shipyards, leading the U.S. Army Corps of Engineers to experiment with various approaches to channel dredging (U.S. Army Corps of Engineers n.d.).

In contrast to the area's plentiful waterways, land is much less readily available. This is especially true for land with access to deep water, as well as with the infrastructure or capacity to support loading and unloading, supply delivery, and launching boats or barges. In addition, of course, land must be for sale and not held by a competitor. The challenges associated with finding land upon which to build a fabrication yard or shipyard led some study participants to describe their success, or their experience having had a lease terminated so another yard or company could expand, in terms of either good or bad luck. Several participants suggested that some companies in the area were holding land in order to keep it out of the hands of competitors.

Traffic is less of a problem in the study area today than it was in the past. The construction of Interstate 90, an alternative to old Highway 182, provides a thoroughfare in and out of town. This road experiences significant traffic during shift changes, especially those that involve travel east to Houma or Thibodaux. Away from the highway, the shift changes near the shipyards, especially along the row of yards in Morgan City and throughout Amelia and extending on old Highway 182 towards Gibson, produce a significant flow of traffic, but during the study period that was concentrated during shift changes in the early morning and late afternoon.

5.4.2. Housing, Commuting, and Traffic

During ethnographic data collection, study participants did not report lack of housing as a significant problem, partly because there was no major damage from the storms of 2005 and 2008, and partly because the housing market is generally favorable for homeowners and renters. Due to long-standing challenges in getting access to land for development within Morgan City (see Austin and McGuire 2002), the nearby communities of Amelia, Berwick, Bayou Vista, Patterson, and even Houma provide housing for area residents. There are effects associated with the presence of fabrication and shipbuilding operations, such as dynamism in the rental market as temporary workers come and go, perceived risks to family or community associated with the presence of temporary or migrant workers (i.e. those with limited connection or attachment to the local community), and the possible consequences of shipbuilding & fabrication yards in close proximity to residential areas (movement of heavy machinery, overspray, etc.). In addition to these ethnographic data collected by the research team, census data on characteristics of housing stock, rental costs, and home values help to explain why study participants do not consider

housing, commuting patterns, or traffic to be concerns as serious as they are have proven to be in other study communities.

In 1970, 9,974 units (62%) in the Morgan City MSA were owner-occupied, while 6,116 units (38%) were renter-occupied (see Figure 5.8; Appendix H, pp. 134 - 136). The proportion of homeowners has increased and the proportion of renters has decreased, indicating increased affordability of housing. From 1970 to 2007, real gross median rent in the Morgan City MSA increased 22%, from $443 to $540, making it comparable to the Houma-Thibodaux MSA. Rents plummeted in the 1980s, but have grown substantially (20%) since 2000 (see Appendix H, p. 130 - 132).

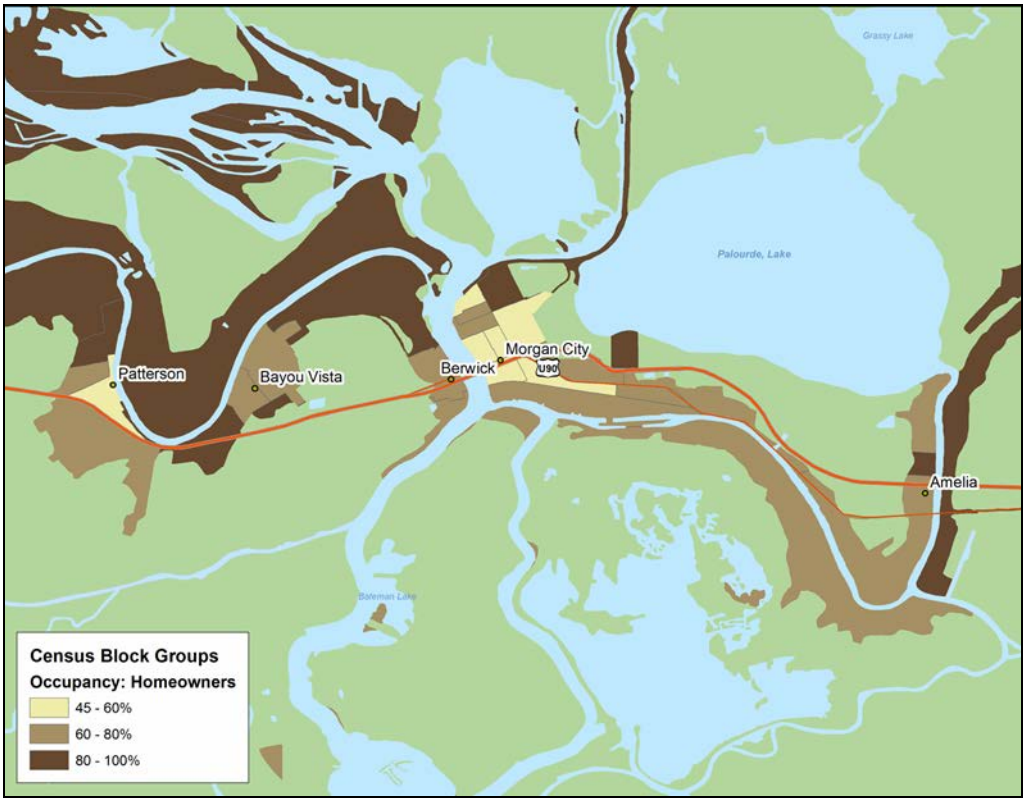

Figure 5.8. Housing occupancy: Homeowners.

Source: U.S. Census Bureau 2000 Summary File 1; U.S. Census Bureau 2010 Summary File 1.

The proportion of Morgan City MSA residents paying rents in the lowest 20th national percentile rose to 50.3% in 2000, up from 35% in 1970. In the same year, the proportion of residents paying rents in the middle 60th national percentile fell to 48.9% (down from 56% in 1970), while the proportion paying rents in the upper 20th national percentile was 0.7%, down from 12.5% in 1970 (see Appendix H, pp. 131 - 132). In contrast, the median home value for the Morgan City MSA decreased 2% from 1970 to 2007, after having increased substantially in the 1970s and plummeted in the 1980s. However, unlike the gross rent, median home values declined substantially from 2000 to 2007. As of 2007, for example, the median home value was $73,170, a decline of $33,219 (32.2%) from $106,389 in 1980 (see Appendix H, pp. 132 - 134).

As of 2000, 42.9% of the homes in the Morgan City MSA were valued in the lowest 20th national percentile, a 27% increase from 1970. The proportion of homes with values in the middle 60th national percentile was 50.6%, down from 58.3% in 1970; and the proportion with values in the upper 20th national percentile was 4.5%, down from 14.7% in 1970. That year, for Morgan City proper, 28.8% of the homes were valued in the upper 20th national percentile, a proportion that has decreased considerably since 1970 (see Appendix H, pp. 133 - 134).

As already noted, the hurricanes of 2005 and 2008 did not affect St. Mary Parish's housing stock. However, the number of vacant units in the Morgan City MSA had increased from 6% in 1970 to 9% in 2000, mirroring the drop in population within the MSA (see Appendix H, pp. 135 - 136).

The number of building permits issued in the Morgan City MSA also reflects the devastating economic effects of the 1980s oil industry downturn, but shows no effect of the 2005 or 2008 storms. The number of building permits averaged 49 from the mid-1980s until 1993 when it began to climb, reaching 100 by mid-decade and remaining at about that level since then. Multiple dwelling permits are rarely issued; none was issued during 1987-1994 (see Appendix H, pp. 136 - 137).

Commuting patterns in St. Mary Parish changed from 1970 to 2000 (Table 5.2). The total number of people working in the parish increased during the 1970s, decreased during the 1980s, and increased again after 1990. At the same time, the number of workers commuting to St. Mary Parish increased 116%, comprising 29.8% of the total workforce by 2000, which is up from 18% in 1970, but down from 34.3% in 1980 and 33.5% in 1990 (see Appendix H, pp. 137 - 138).

Table 5.2.

Work Commuting Patterns by Decade for St. Mary Parish

	1970	1980	1990	2000
Staying	15,491	22,540	18,260	17,345
Entering	3,411	11,766	9,192	7,378
Leaving	1,045	2,679	2,426	2,274

Source: U.S. Census Bureau, Journey to Work and Place of Work Data.

Study participants reported that east St. Mary Parish residents commuted primarily for work in commercial services and retail outlets, some going as far as New Orleans for work, especially in the wake of Hurricane Katrina to work in cleanup and recovery, as well as the subsequent construction efforts. According to U.S. Census data, the largest proportions of workers leaving St. Mary Parish are finding work in services, followed by forestry, construction, and manufacturing. The largest sector attracting commuters is forestry, followed by services, manufacturing, and construction. Manufacturing attracts 13.7% of the commuters from outside the parish, with workers coming from 11 different Louisiana parishes but primarily from Assumption, Iberia, and Lafourche.

5.4.3. Economic and Industrial Development

The St. Mary Parish Department of Economic Development, located in Franklin, helps promote business in the parish, assists with the expansion of existing businesses, helps introduce developers to local landowners, provides information and negotiations for state-funded incentives and programs, and aids in the maintenance of those incentives and programs once implemented. The department works in cooperation with the St. Mary Chamber of Commerce in Morgan City, the Cajun Coast Tourist and Convention Bureau, and the St. Mary Industrial Group, as well as the local municipalities and the citizens of the unincorporated areas of the parish. The department helps businesses and industries access incentives such as those available through its Enterprise Zone, training resources, ad valorem and new equipment purchase tax abatements, tax-free Industrial Development Bonds, and assistance establishing public-private partnerships (St. Mary Parish Department of Economic Development 2007).

The St. Mary Industrial Group was incorporated as a non-profit business and industry organization which functions primarily as a political action group focusing its efforts on industrial, economic and employee/ employer concerns in St. Mary Parish (St. Mary Industrial Group n.d.). The area is also served by the South Louisiana Economic Council, a regionally focused economic development agency formed in 1983 to promote industrial assistance and programs designed to create economic growth in Assumption, Lafourche, St. Mary and Terrebonne parishes.

5.5. Influence of the Industry on the Population of the Region

The offshore oil and gas industry, including the shipbuilding and fabrication companies that produce infrastructure and components to support the industry's operations, have generated significant wealth in east St. Mary Parish. However, wealth generation is cyclical, because periods of industrial growth and expansion regularly alternate with periods of decline and contraction. The hollowed-out and abandoned buildings along Highway 182 from Morgan City to Amelia dramatically illustrate the consequences of unpredictable boom-bust cycles in the industry. Yet, for the industry's managers and workers, as well as community residents and leaders, each most recent downturn portends the next upturn, despite the fact that factors causing both are largely beyond their control.

5.5.1. General Population Dynamics

A less obvious sign of the industry's boom-bust cycles, and associated changes in wealth generation, is the 15.5% decrease in St. Mary Parish's population from 60,752 people in 1970 to an estimated 51,311 people in 2007. As Figure 5.9 shows, the population grew until 1983 before declining in each subsequent year, with the greatest decline (9.7%) in the 1980s. Although the parish appeared to benefit from Hurricanes Katrina and Rita by growing 1.5% from 2005-2006, the small spurt in population growth was temporary, and the population fell once again the following year. The populations of Morgan City, Baldwin, Berwick, and Franklin all decreased between 1970 and 2007; only the City of Patterson's population rose (see Appendix H, pp. 112 - 113).

The number of births in St. Mary Parish declined during 1990-2007 by 46.4%, well above the averages for the State of Louisiana, as well as St. Mary's neighboring parishes, Lafourche and Terrebonne. Nevertheless, the per capita birth rate in St. Mary Parish remains higher than the state's birth rate and, although the parish's high per capita death rate partially offsets the high

birthrate, the parish continues to lose population (see Appendix H, pp. 118 - 119). Since 1990, net domestic migration has also been negative, with approximately 651 more people leaving than entering St. Mary Parish each year (see Appendix H, p. 116 - 120). The only exception occurred in 2006, when people temporarily relocated to the parish following Hurricanes Katrina and Rita. The next year, the migration deficit returned. Moreover, since 1980, the minority populations of the Morgan City MSA increased, indicating that people leaving St. Mary Parish are disproportionately white, non-Hispanics.

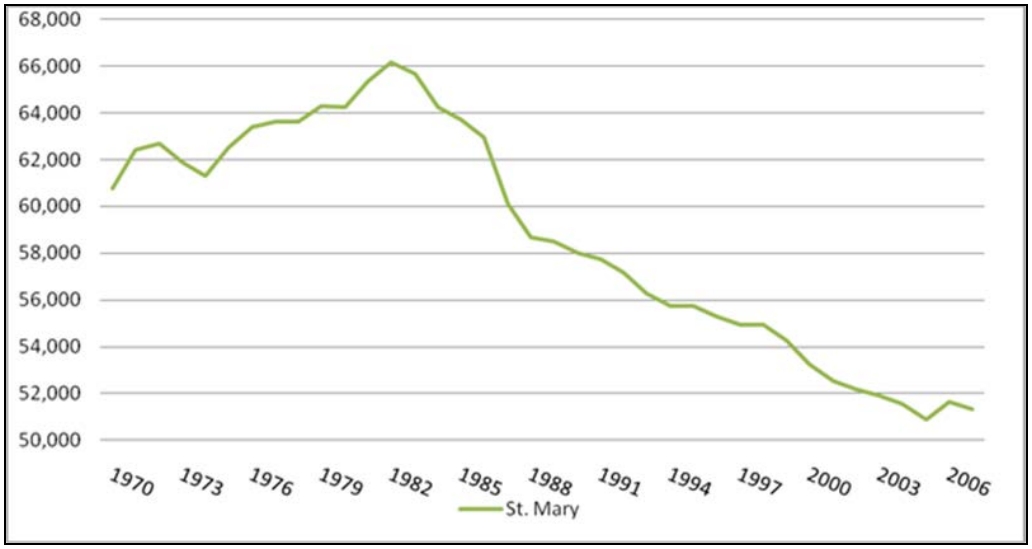

Figure 5.9. Population in St. Mary Parish.

Source: U.S. Census Bureau 2000 Summary File 1; U.S. Census Bureau 2010 Summary File 1

St. Mary Parish's population declines do not correspond with manufacturing employment and wage changes in the Morgan City MSA (see Appendix H, p. 140). Although increases in manufacturing employment during 1986-1991, 1993-1998, and 2000-2007 resulted in population increases for both Morgan City and St. Mary Parish, increases in shipbuilding and fabrication employment during 1990-2000 and 2004-2007 did not.

Household composition in the Morgan City MSA area is changing, with the number of married couples decreasing and the number of single parents increasing. In 1970, married couples headed 90.4% of all households, but that number decreased to 65.5% in 2000.

St. Mary Parish's median household income is also changing, but these changes are not uniform and lag behind increases observed for the state. In this connection, the offshore petroleum and gas industry's influence on the study area is particularly evident. From 1950 to 1980, median income in St. Mary Parish was higher than in Lafourche Parish and in the State of Louisiana, but, since 1980, it has fallen below state and regional figures. During 1989-2007, St. Mary's median income increased by 72%, but this is less than the growth rate for the state (78.8%) and neighboring Lafourche and Terrebonne parishes (83.6% and 97.4%) and the growth rate declined in 1990, 1999, and 2001, in keeping with declines in manufacturing wages and employment during those years. In 2006, St. Mary Parish's median income rose by a phenomenal 8.7%, the largest increase for a single year during the reporting period.

In Morgan City, the real median household income in 2007 was $41,212, down 26% from 1979 and lower than the real median household income for the Houma-Thibodaux MSA ($50,882) as well as the City of Houma ($53,805). During 1980-2007, the proportion of people with incomes in the lowest 20th national percentile increased across the Morgan City MSA, in sharp contrast to 1979 when 20.7% of the population was in the upper 20th percentile nationally.

5.5.2. Workforce Development and Trends

Since 1970, the working-aged male population of St. Mary Parish has grown older. From 1970 to 1988, men 20-29 years of age made up the largest proportion of the working-aged male population. During 1988-1997, men in the 30-39 year age range constituted the largest proportion and, from 1998 to 2007, men between the ages of 40 and 49 accounted for the largest proportion. Since 1990, men over age 60 have been St. Mary Parish's fastest-growing male population, whereas the total male population under age 49 has declined (see Appendix H, pp. 113 - 115). Across the study region, unemployment peaked in the early 1990s, but has decreased since then (Figure 5.10). After a decade of increasing unemployment, the parish benefitted from a post-Hurricane Katrina and Rita surge in employment (see Appendix H, pp. 138 - 140).

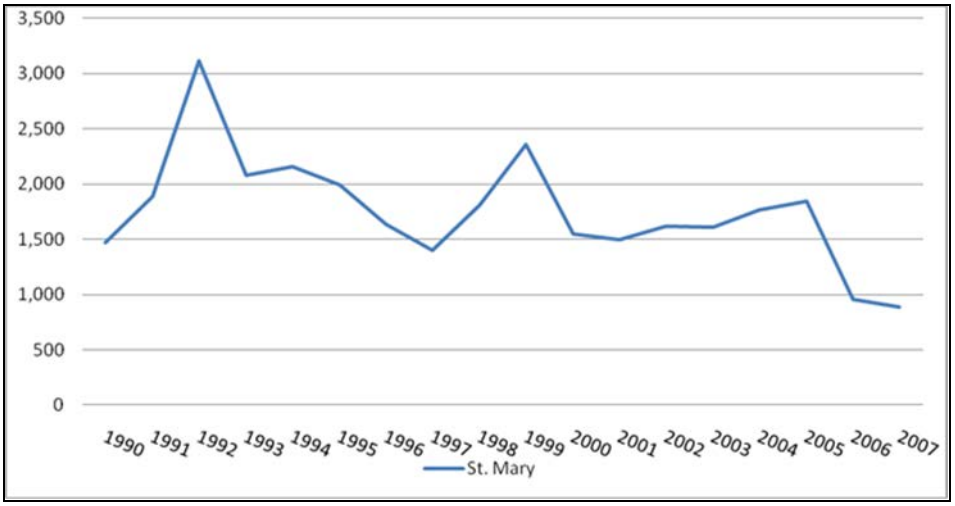

Figure 5.10. Total number unemployed in St. Mary Parish.

Source: U.S. Department of Labor, Bureau of Labor Statistics, Local Area Unemployment Statistics.

5.5.2.1. The Shipbuilding and Fabrication Workforce

Occupational choices in east St. Mary Parish have ranged from fur, cypress, and seafood harvesting to oil or gas exploration and extraction, and the pool of workers mirrors the diversity of opportunities. Employers have drawn workers from waves of different ethnic groups, whose arrival usually coincided with economic boom periods. In east St. Mary Parish, like much of the Gulf Coast where fishing had been the dominant industry before the offshore oil and gas industry displaced it, expertise in boat building, marine engineering, and waterways navigation served the communities well, because the relevant skills helped meet the new dominant industry's needs. Because of east St. Mary Parish's role in shipbuilding and fabrication for offshore operations, as new industry evolved, individual, family, and community identities became strongly linked to the fates and fortunes of key local companies. A sense of community civic pride was associated

with the companies as well as the people who started and developed them. However, the offshore oil and gas industry's downturn in the 1980s, along with the subsequent restructuring of the industry and transfer overseas of much shipbuilding and fabrication, has seriously eroded community civic pride, leaving companies without workers and workers unwilling to put up with the risks and instability that they associate with industry jobs. Added to this, an overall decline of the prestige traditionally associated with skilled trades and greater access to college for east St. Mary Parish's youth have left the industry, which still seeks to expand, without the young, growing labor force that could be groomed to become managers, foremen, and experienced crew members of the future.

East St. Mary Parish's employers and workers attributed worker shortages to three main factors: the 2008 upturn in Gulf of Mexico oil production resulting from the rising price of crude and successful exploitation of new deepwater fields; damage caused by Hurricanes Katrina and Rita; and the increasing number of parents and grandparents who urge their children or grandchildren to get college educations rather than take chances with the turbulence of an oil industry career. Individuals entering the industry do so as "company" employees, where both managers and workers expect employment to be long term and stable, or they do so as temporary or contingent employees hired by labor contractors who sub-contract with shipyards, or by labor staffing offices that have contracts to provide a certain number of workers to yards for a fixed time.

Manufacturing employment in east St. Mary Parish has remained the same in absolute numbers since the 1970s, but its percentage of overall employment has shrunk to just over 6% due to population and job growth. Nevertheless, shipbuilding and fabrication make an important contribution to the parish's and the region's economy. Manufacturing income grew 248.6% in the 1970s, 30.2% in the 1980s, 51.1% in the 1990s, and 37.5% from 2000 to 2006 (see Appendix H, p. 140). Thus, while manufacturing's share of overall employment has diminished, manufacturing income continues to rise. Likewise, nominal wages[21] based upon total personal income have steadily increased over the past 40 years, so that, on average, workers receive relatively good nominal wages. Some of the wage increase is due to the fact that, following regional trends, many jobs requiring large numbers of unskilled workers have been moved to counties with lower labor costs. Still, real wages have been relatively stable and have increased slightly since the 1970s. As a result, there has been modest growth in real average wages per job and slow real growth in personal income, despite a notable decline in the latter during the 1980s.

Some workers noted that they chose to work in fabrication and shipbuilding over other local options, but others reported that they were working in the industry to gain experience in order to qualify for more attractive offshore positions. For example, one young man who had been cross-enrolled in high school and the area's trade school stated that he received good benefits, which included a 401K Plan, dental and health insurance, and paid vacations. For him, this benefit package helped offset the negative aspects of the job, such as physical danger, lower pay than offered by similar companies, the company's tendency to hire undocumented workers and pay them less than the regular employees, and the need to work 12-hour days seven days a week while attending school five days a week. Still, he expected to remain at that job only until he could get a position offshore (TB001 2007).

[21] Nominal wages are the wages paid in current dollars unadjusted for inflation, whereas real wages are wages measured in constant dollars adjusted for the effects of inflation. Inflation is typically defined as a rise in the general price level of a typical market basket of goods and services.

Many study participants noted that fabrication and shipbuilding jobs, especially those requiring core skilled laborers (e.g., welders and fitters) were increasingly taken by foreigners, especially Mexicans. Some personnel directors noted that they and their co-workers had begun studying occupational Spanish to improve communication on their yards (see also Chapter 2, Volume III). Managers of other yards reported high percentages of workers from foreign countries, especially those that had hired workers holding H-2B visas (see Section 5.5.2.5). Decisions about hiring non-local workers varied by yard. Some study participants noted with pride that they maintained a stable workforce of "local" employees, while others readily described strategies for contracting and expansion that rely on local permanent workers, contracted temporary labor, and sponsored H-2B workers who stay on site and work on the yard for the duration of their work visa.

Specific challenges associated with meeting workforce and labor demands include the need for knowledge transfer and on-the-job training. As an aging workforce moves out of the industry, older workers need opportunities to share their knowledge and experience with younger workers. But with few younger workers heading to the workplace (whether they were funneled away or intentionally avoided the skilled trades), the connection between generations of workers is lost. Company strategies that rely on temporary and visa workers to fill these gaps exacerbate the problems as the skills and experiences these temporary workers accrue leave with them at the end of their contract or when their visa expires.

5.5.2.2. Alternatives for Skilled Workers

As the offshore oil and gas industry grew, so did the companies and skilled workforce that provided necessary support and services to keep the industry thriving. Along with fabrication and shipbuilding, a plethora of other companies expanded their scope of operations and workforce. Among the companies were those in diving, maritime transportation, supplies and servicing, maintenance and installation, propeller and driveshaft repair or fabrication, steel and aluminum suppliers, ship and barge cleaning and repair yards, marine surveying and engineering, and salvage and recovery work. Offshore work tends to pay higher wages than onshore work, as do jobs requiring computer skills. One shipyard worker, who graduated from the local technical college with a degree in electronics and computers, reported that his first job was in oilfield tubular services where he earned almost $22 an hour and managed his own division. During busy periods, he would work at least 16 hours a day, but he spent most of that time in an office by himself in front of a computer, so he left to take a job with an area shipyard. However, the yard had only limited work for someone with his skills, so the job did not last long, and he turned to consulting work (TB002 2007). At the time of the study, workers based their decisions about whether to work in a fabrication yard or shipyard not only on pay, safety, benefits, and job satisfaction, but also on whether they could work offshore, the latter requiring higher levels of citizenship documentation as well as a Transportation Worker Identification Credential (TWIC) card at the time of the fieldwork for this study.

Other employment options for workers from east St. Mary Parish include the refineries and chemical plants that line the Mississippi River near Baton Rouge. During the study period, some participants reported that they or people they knew went to New Orleans or Houston to work in the post-hurricane recovery efforts, or in industrial or residential construction projects initiated or expanded after the storms.

5.5.2.3. Finding Out About Work

When field research was conducted, it was widely known within the study area that most of the companies there, and especially the larger companies, needed workers, and that an individual who could walk in and pass a welding test could often go to work the same day. Many companies also ran advertisements in the local newspaper, and had listings available at the local employment office where job placement and unemployment officers sought to place potential employees. Employers also had to issue a minimum of two print advertisements if they intended to apply for workers on H-2B visas (see Chapter 2, Volume III). Some of the smaller companies had a more stable workforce, and were more strategic and selective in their hiring practices, partly due to the expense of testing each employee for both skills and drug-use (see Chapter 2, Volume III), but also to ensure that a person would fit into their company's particular milieu.

Local labor offices, contractors, and placement services were also booming, because companies used them as filters for their employee searches, and it was widely recognized that workers often had to begin as a contract employee. Some of the companies would promote the best of the temporary workers into their permanent employee ranks, after a sufficient period of work demonstrated the workers' skills and abilities, while other companies, regardless of workers' skill levels, drew on these services to maintain a flexible workforce to which they had no binding commitment if a work slowdown occurred or problems with a particular employee arose.

5.5.2.4. Establishing and Maintaining a Workforce

Although companies face considerable challenges finding workers, due to the area's high drop-out rate for both secondary schools and colleges, many young people were still moving into vocational technology programs that could prepare them for jobs in east St. Mary Parish yards. The level of educational attainment in the Morgan City MSA has changed over time, but it remains well below state and national averages. The proportion of people who had not graduated from high school decreased from 62.7% in 1970 to 33.4% in 2007 and the proportion holding at least a college degree increased from 37.3% in 1970 to 66.5% in 2005. These proportions do change significantly when comparing Morgan City to its surrounding communities in the Morgan City MSA (see Appendix H, pp. 125 - 127).

State and local programs had been initiated to promote and subsidize vocational education for high school students. Industry officials and technical colleges had also partnered to create a streamlined process by which individuals could move directly into the workforce after training. Some study participants viewed these programs as a fundamental component of their strategy to increase the trained labor pool. Instructors and administrators at the nearest technical colleges noted that their welding classes were full, with students being attracted by state scholarships and the lure of high paying jobs associated with the oil, fabrication and shipbuilding industries. Even though the colleges were restructured in recent years so that all their classes are taught on a semester schedule, both instructors and students reported that many students remained in class only long enough to gain the skills necessary to get a job or promotion.

In addition to the technical college training programs, some of the larger yards maintain onsite training centers, some of which are oriented more toward testing potential employees rather than their training and development. Once potential employees can pass the welding test, they are generally placed in a crew on the yard where they receive some of the on-the-job training (OJT) necessary for learning to work on a shipyard. Human Resources managers and

welding instructors/testers observed that, while many people could initially or eventually pass the welding test, they were not necessarily ready for physical work on the yard, which is often dirty and difficult; for actual welding conditions, which deviate widely from conditions in booths where welding instruction and tests take place; or for the sometimes semi-supervised conditions of yard work, which require an employee to know what to do without being shown every single process or step.

A couple of area shipyards acquire employees from the St. Mary Parish Work Release Program through a contract with the Louisiana Department of Corrections, which began in May 2005. In the program, companies test the workers and give them a work contract, like any other employee. Prison authorities provide transportation for the workers, who continue to live at the prison and are charged for room and board there. Because of the history and extent of the area's fabrication and shipbuilding industries, many prisoners have welding experience and benefit from the opportunity to work on the yards. At the time of the study, the program was limited to two shipyards, which needed all the workers that the prisons could provide (SC033 2008).

Employers shared examples of training programs, incentives, and career tracks as mechanisms for increasing the local workforce, as well as the more limited programs such as the work release program described above. A number of study participants emphasized the importance of employing H-2B visa workers as the solution that was increasingly being adopted by local fabrication and shipbuilding companies (see below). During the study period, workers holding H-2B visas and other non-resident workers were housed in onsite trailers or dormitories at several shipyards in east St. Mary Parish. Additional workers were living in trailer parks nearby. One advantage of hiring workers from outside the region or the United States, cited by some participants, was that companies could bring in trained workers, recruiting them based on their existing skill set and availability, or because they would be candidates for a company's fast-track training program and be willing to relocate to the area. Similarly, labor contractors were valued because, even though companies paid higher hourly wages to contractors than when hiring workers directly, the contractors identified and screened workers for their skills, making it possible, at least in theory, for the worker to start working immediately without additional training. In addition, companies that do not hire them directly have few obligations to individual workers, and can send them away if they lack the required skills or are no longer needed.

5.5.2.5. Temporary Workers

Of all the strategies area fabrication and shipyards were using to attract employees at the time of this study, hiring H-2B visa workers, along with undocumented workers, was reported to be of concern to local residents. In particular, concerns about individuals who spoke foreign languages (particularly Spanish) and exhibited cultural differences were at the forefront of discussions about potential conflicts with foreign workers. It is impossible to determine the number or origins of undocumented workers, but Table 5.3 shows the number of H-2B visas that were requested by and certified to employers seeking workers in east St. Mary Parish between 2000 and 2010. As the table indicates, the number of requests was significantly higher than the number certified. Table 5.3 shows the locations and job titles for visas certified to companies specializing in welding and other fabrication-related jobs, as well as visas for which the requests were denied. The first year that any companies were certified to receive H-2B visas for work related to fabrication in this region was 2003. As shown, although employers in fishing, restaurants, construction, and other industries requested and were certified to receive workers, the rapid increase in requests by area fabricators after 2005 is striking. The rapid decline in

certifications has been attributed to a concerted effort by State Workforce Agencies to document that workers are available to fill the positions for which temporary visas were being requested (see Chapter 2, Volume III).

Table 5.3.

H-2B Visa Certifications/Requests for East St. Mary Parish, 2000-2010*

Year	Construction	Fabrication	Fishing	Hospitality	Other
1999	0/0	0/0	0/0	0/0	0/0
2000	0/0	0/0	0/0	0/0	0/0
2001	0/0	0/0	0/0	0/0	0/0
2002	0/0	0/0	70/70	0/0	0/0
2003	0/0	8/8	70/70	0/0	0/0
2004	0/0	0/0	70/70	0/0	0/0
2005	0/0	0/0	70/70	0/0	0/0
2006	0/0	400/400	95/70	75/155	0/0
2007	150/165	1474/2139	18/30	5/5	0/0
2008	208/410	26/826	0/0	10/10	0/0
2009	0/0	0/134	0/0	0/0	0/0
2010	0/0	0/100	0/0	10/10	0/0

*Includes Patterson, Morgan City, and Amelia
Source: U.S. Department of Labor 2011
Note: Construction includes construction worker; fabrication includes all types of welders, pipe fitters, metal fabricators (see Table 5.4 below); fishing includes fisher, shellfish shucker, deckhand fishing vessel, and such; hospitality industry, for restaurants and hotels, includes kitchen helper, food assembler, housekeeper, and such); timber includes forest workers, tree planters, and such; and other includes everything else.

Table 5.4.

H-2B Visas Certified in Welding and Fabrication-Related Jobs in the Costal Bend, 2003-2010

Year	City	Job Type	Number Certified	Number Denied
2003	Patterson	Shipfitter	8	0
2006	Morgan City	Welder Fitter	400	0
2007	Amelia	Fitter	450	0
2007	Amelia	Fitter I	400	250
2007	Amelia	Combination Welder	400	0
2007	Morgan City	Fitter	0	5
2007	Morgan City	Shipfitter	24	0
2007	Morgan City	Shipfitter Helper	0	5
2007	Morgan City	Combination Welder	0	205
2007	Patterson	Arc Welder	200	0
2007	Patterson	Combination Welder	0	200
2008	Amelia	Fitter	0	800
2008	Morgan City	Welder Fitter	26	0
2009	Morgan City	Welder Fitter	0	34
2009	Patterson	Fitter	0	100
2010	Patterson	Metal Fabricator	0	100

Source: U.S. Department of Labor 2011

5.5.3. Impact of the Hurricanes (2005 and 2008)

Morgan City has promoted itself, and has developed something of a reputation, as a relatively safe harbor from hurricanes, given the land building function of the Atchafalaya River Delta, its location 30-40 miles inland from the Gulf Coast, and the 22-foot seawall that surrounds Morgan City proper. As such, even though east St. Mary Parish has lost some local companies to industrial or port areas with easier access to the Gulf, such as Port Fourchon, it is well regarded for apparent resiliency against storms that have damaged communities to the east and west of Morgan City. The area is not without risk, however, as demonstrated by the relatively severe impact of Hurricane Andrew in 1992. Compared to Katrina, Rita, and Ike, hurricanes that caused crises or tragedies in the recent years, east St. Mary residents exhibit a certain experience based confidence in their community's capacity to deal with preparations, impact, and aftermath of significant storm events.

In 2005, Hurricane Katrina ravaged New Orleans and coastal Mississippi and Alabama, and Hurricane Rita decimated Cameron, Louisiana, and seriously impacted southeast Texas. In 2008, Hurricane Gustav passed directly over Morgan City as a significant storm event, but made few dramatic impacts, except some issues with downed trees and power lines; some damaged buildings, storefronts, and roofs; and a lack of sewer, water, and electrical services for a few days after the storm. Similarly, Hurricane Ike, which significantly damaged much of the southeast Texas coast and flooded much of western coastal Louisiana, caused few impacts in east St. Mary

Parish. The area's good fortune was attributed to a mix of community-level preparedness capacity and experience, geographic positioning, and sheer luck in terms of the storm path.

Nevertheless, Morgan City and surrounding areas experienced the impacts of dislocated refugees who fled hurricanes or their aftermaths, and the migration of workers to sites offering attractive temporary employment opportunities in cleanup and recovery efforts or industrial construction and replacement work. Both kinds of temporary employment drew local workers away, many of them keen to take advantage of elevated wages in the post-hurricane context. Longer-term impacts of the storms, exacerbated by the attenuated media focus and news coverage of these events, have been outsiders' increasingly negative perceptions of the area and its safety. Morgan City may be safer or more protected than some of the more threatened areas, and it may have demonstrated incredible resilience in the wake of storms over the past 15 years, but the regional/national perception of the area does not differentiate or recognize this nuance. Perceptions of southern Louisiana as an area homogeneously threatened by hurricanes could threaten the recruitment of industries, companies, and workers east St. Mary Parish.

5.6. DISCUSSION

The shipbuilding and fabrication industry of east St. Mary Parish is very closely tied to the offshore oil and gas industry. Residents and leaders of this study area, and particularly Morgan City, boast of their community's position as the birthplace of the offshore petroleum industry, and the industry remains central to the local economy. Consequently, locals generally work to maintain a positive and productive relationship with both the petroleum industry and the fabrication and shipbuilding industry that supports and interact with it. Nevertheless, study participants expressed concern that their region lacks an aggressive benefactor who advocates for their concerns and that of the industry and the companies that comprise it. As a result, they have seen resources poured into places like the new facilities at Port Fourchon, while the development of Morgan City's infrastructure has been ignored and the city left behind.

No local political issue better characterizes this situation than dredging the Atchafalaya River Channel to provide the region's shipbuilding and fabrication industry with better water access. Local responses to the Army Corps of Engineers, perceived as the responsible party, range from bemused frustration to outright anger and hostility. The Corps has failed, according to many east St. Mary Parish residents, to maintain the basic water depth of the channel, a failure significantly exacerbated by the unique, land-building context of the silt- and fluff-filled Atchafalaya River. At the same time, there is concern among parish residents about the treatment of the local environment, particularly the potentially negative impacts of past and present industrial activities related to oil and gas. While very few parish residents expect, nor hope, that that the oil and gas industry will go away, some have begun to give serious consideration to the industry's long-term impacts on the local social and natural landscapes.

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6. PORT ARTHUR-ORANGE

6.1. INTRODUCTION

Port Arthur, Beaumont, and Orange, Texas—the principal cities in the area known as the Texas "Golden Triangle" (Figure 6.1)—have long been identified with shipbuilding. Settled on the west bank of the Sabine River in the mid-19th century, this region of southeast Texas possessed abundant yellow pine forests and cypress trees, fertile soils for growing rice and cotton, and easy access to the Gulf of Mexico. The completion of railroads facilitated transportation of goods and linked the area's lumber industry to southern and southwestern markets, forming the economic base of communities and local economies through the turn of the 20th century. A rich supply of timber, skilled carpenters, and close proximity to the Gulf of Mexico via the Sabine River spurred the development of numerous wooden shipbuilders. Over time, the industry evolved from building steamboats and schooners that transported lumber and farm products to tugboats and barges that hauled fuel oil and crude from oil fields along the Texas and Louisiana coasts to local refineries (Williams 1988).

Figure 6.1. The Golden Triangle and Surrounding Communities.

Map created 2011 using data packages included with the ArcGIS software suite. Sources used to create these data layers included: ArcWorld/ESRI, National Atlas of the United States, Tele Atlas, U.S. Bureau of Transportation Statistics, U.S. Census, and U.S. Geological Survey.

Although the first ships were built earlier, and area shipyards constructed wooden sailing vessels and steamships for the War Department during World War I, it was during World War II that the region's shipyards expanded dramatically.

Tens of thousands of workers built hundreds of vessels for the U.S. military. Many shipyards remained active after the war and transitioned to servicing the emerging offshore oil and gas industry. In the 1960s and 1970s, the region's shipbuilding and fabrication yards experienced a long period of sustained growth, with some setbacks along the way, until the major economic recession and "oil glut" of the 1980s hit the region hard, forcing many of the larger firms to close their doors and sell out. As occurred in most communities along the northern Gulf Coast, the dismantling of the oil industry during the 1980s forced many skilled workers out of the oil field and out of the region.

In the 1990s, mergers and acquisitions reshaped the shipbuilding industry in the Golden Triangle, and many of the old yards reopened under new ownership. In addition, the demand for rig repair/conversion work to refit older drilling rigs for working in deeper water and drilling at greater depths created an entirely new focus for the industry. Thus, although most new construction of large vessels and mobile drilling rigs moved out of the Golden Triangle in the 1980s to places like Brownsville, Pascagoula, and Singapore, in the early years of the 21st century Golden Triangle shipbuilders were able to carve out a niche in the new, lucrative and stable repair/conversion market.

6.1.1. General Description

The Golden Triangle has been shaped by a unique mixture of social and cultural influences, most notably African American, Cajun, Hispanic, German, Vietnamese, and Native American, and sits at a crossroads between southeast Texas and southern Louisiana, an area where Cajun and Texan influences intersect. The region is distinct from coastal southern Louisiana to the east, the scrub woodlands and pine forests to the north, coastal Texas to the southwest, and urban and suburban Houston to the west. Furthermore, the discovery of oil at Spindletop in 1901 established the region and spurred much of its early growth. While a diverse collection of small communities make up the Golden Triangle (in addition to Beaumont, Port Arthur, and Orange, the region includes their interconnected suburbs and bedroom communities), and while many people identify with their own communities rather than the entire Golden Triangle, practically speaking the Golden Triangle region's industrial character is relatively consistent, and the relationships linking local communities to fabrication and shipbuilding companies display some regularity within and across communities.

Much of the region's wealth can be attributed to natural resources found there, particularly the Spindletop salt dome oil discoveries in the first part of the 20th century. More recently, the communities in the Golden Triangle have developed a complex interlinkage of industry, business, and commerce, along with residential and suburban development, that emerged from the initial oil exploration and production, but has expanded in multiple directions. Certainly, much expansion and growth have been tied to the petroleum refining and processing industry, as well as the industrial construction and maintenance trades required to service them. Still, the Golden Triangle's historical linkage to the shipbuilding and fabrication industry, and especially the World War II-era increase in shipbuilding production capacity (particularly in Orange, Texas), extends into the present. Today, shipbuilding and fabrication are focused on meeting the needs of the offshore petroleum industry for crew and supply boats, rigs and platforms, and transport barges, as well as rig and platform refurbishment and repair. The presence of refineries,

petrochemical plants, and other processing facilities, and indeed their predominance in terms of employer hierarchy and vocational priorities, form a unique context as it relates to the shipbuilding and fabrication industry. This is especially true, given the considerable overlap between the skill sets and training required and the potential competition among companies for workers in an already competitive labor market.

The Golden Triangle includes all of Jefferson County and Orange County, most of Hardin County and portions of four other counties—Chambers, Jasper, Liberty and Newton. Of the Golden Triangle's three principal cities, Beaumont is the largest, with a population of approximately 114,000. Port Arthur, a sprawling metropolitan area that includes the suburban communities of Groves, Port Neches, and Nederland, has a much smaller population, approximately 55,000, but occupies a similar land area. Port Arthur is an older city, and the crumbling downtown, especially the now abandoned Hotel Sabine, whose 10 stories tower over the rest of the downtown area, points to a bygone era when the neighborhood was a more prominent community center. Numerous boarded storefronts and abandoned buildings are interspersed with the remaining downtown businesses and government offices. The bulk of the commercial activity takes place on the city's periphery, as numerous housing developments, high density "worker hotels," and commercial sectors are thriving in the suburbs, even as the urban core is actively hollowing. Port Arthur is also the site of four petroleum processing/refining facilities and numerous tank farms, all of which butt up against residential and commercial districts. It is a rare vantage point in town that lacks a clear view of a refinery, and nowhere is evidence—in the form of sight, sound, or smell—completely absent. When fieldwork was conducted for this study, the refineries were undergoing a significant expansion: two primary facilities were being modified to drastically increase their daily production capacities. The shipyards have no such visibility, as they are for the most part sequestered behind the 16-foot seawall, or on the edges of what would be considered the Port Arthur metropolitan area. A few larger fabrication and repair yards are located in close proximity to the large refinery operations, but the prime real estate with water channel and highway access has been made primarily available to the refineries. The heavy traffic of mid-sized boats ferrying product to and/or from the refineries is a prominent feature of the waterways.

Sabine Pass, which was annexed by Port Arthur in 1978 but still has its own high school and fire station and is separated by nearly 10 miles of highway, figures prominently in the fabrication and shipbuilding industry given its proximity to the Gulf, its deepwater access, and the lack of bridges or obstructions along its principal waterways. The area has been a hub of activity for rigs and platform refurbishment, especially after Hurricane Katrina and Hurricane Rita in 2005. Most local businesses survived Rita and later Hurricane Ike (2008), but whole sections of housing were rendered uninhabitable or completely destroyed by the storms. The decrease in fabrication and rig refurbishment activity observed during fieldwork along the business-industrial corridor that lines the channel in Sabine Pass is partially attributable to the decline in available work, the loss of homes, and social instability in the aftermath of Hurricane Ike.

Orange, with approximately 17,500 residents, forms the third and smallest side of the Golden Triangle, but it has a few of the region's larger and longstanding fabrication/shipyards. The city also has a more vibrant and active downtown area than Port Arthur, complete with libraries, an active theater community, and the newly reopened Shangri La Gardens (known simply as "the Gardens"). In contrast to Port Arthur as well, the industrial district is sequestered from the rest of the town, with the chemical and processing plants lining "Chemical Row," a highway to the south that circumnavigates the main thoroughfare in and through Orange. Sequestration does not

eliminate all evidence of the facilities, however, because flares and smells from these plants serve as regular reminders of their presence. More than the other communities in this study area, Orange is experiencing, or at least pushing for, industrial and community resurgence. Leaders and residents advocated reopening the Gardens, introducing eco-tourism in the region, and nurturing a budding artistic community centered on the theater and the downtown museums—initiatives that contrast with the obvious heavy industrial presence in and around the community.

Bridge City, a small "bedroom" community approximately 10 miles southwest of Orange, houses a few of the study area's smaller yards and, as a midpoint between Port Arthur and Orange, provides a place of residence for people who work in the nearby towns. Bridge City sustained heavy hurricane damage in 2008, resulting from the large tidal/storm surge that destroyed or rendered uninhabitable a large number of homes along the Sabine River. As of January 2009, many businesses in the area remained closed or maintained limited hours, and many homes were still unoccupied. In many neighborhoods, FEMA trailers were set up as a temporary residence in the yard or driveway of almost every home.

6.1.2. Principal Ports and Key Infrastructure

The Golden Triangle has three ports, industrial parks, highways, rivers and canals, and the Southeast Texas Regional Airport (Figure 6.2). The three ports—the Port of Orange, the Port of Port Arthur, and the Port of Beaumont—serve distinct clienteles and handle a variety of cargo, including forest products, iron and steel products, dry bulk products, project and military cargo, and bagged and bailed goods.

In general, Texas ports are political subdivisions of the state, created by the Texas State Legislature under the Texas Water Code. As transportation facilities, the ports have eminent domain authority. In addition, the ports have sought, and received, status as Foreign Trade Zones (FTZ; see Appendix C for summary of all FTZs in the region). The Port Authorities are the granting authorities for FTZs and, study participants reported, the petrochemical companies, in particular, receive tremendous financial benefits from this arrangement, because an estimated 90% of their feedstock is imported foreign oil. A concern for all ports is the lack of dredging maintenance by the Army Corps of Engineers, which at least some local leaders attributed to the diversion of resources to the war in Iraq.

The Port of Orange became a deepwater harbor, open to the Gulf of Mexico in 1916 with the completion of a 25-foot deep channel through Sabine Lake, extending beyond Sabine Pass, and out to the Gulf. The port is a break-bulk port, handling general cargo and heavy-lift cargo to or from barges or deep sea vessels. It has over 3,500 feet of harbor space, 2,300 feet of dock apron and 354,400 square feet of warehouses. Port of Orange Industrial Park has waterfront property on the Intracoastal Canal and Sabine River. Located at a crossroads of railways, Interstate 10, and the Intracoastal Waterway, and near Southeast Texas Regional Airport, the port advertises itself as an excellent site for intermodal development.

Port Arthur's port is also a break-bulk facility, specializing in the product lines and cargos mentioned in this section's opening paragraph. The port serves as a direct transfer facility for international shipping. A year 2000 expansion included operating features specifically required by the maritime industry. The port has a special shed to keep paper and wood products dry, around-the-clock operations, an enclosed rail and truck apron for all-weather operations, and significant dockside rail capacity for direct transfer from ship to rail. In 1983, the port acquired a drydock from Texas Surplus, which it purchased for use by Bethlehem Steel. Bethlehem Steel

closed in 2000, and the drydock was recently sold to Signal International. At the time of this study, the port had little involvement in the fabrication and shipbuilding industries.

Figure 6.2. Ports in the Golden Triangle Region.

Map created 2011 using data packages included with the ArcGIS software suite. Sources used to create these data layers included: ArcWorld/ESRI, National Atlas of the United States, Tele Atlas, U.S. Bureau of Transportation Statistics, U.S. Census, and U.S. Geological Survey.

The Port of Beaumont got its start in 1908 when a nine-foot deep canal was dug in the Neches River from Beaumont to the Port Arthur ship channel (Port of Beaumont n.d.). The channel was deepened to 25 feet in 1916, to 30 feet in 1922, and, during the 1940s, to 40 feet, also the port's current depth. The Port of Beaumont Navigation District, covering an area of about 150 square miles, was created as a State of Texas political body and legislative entity in 1949. The District is governed by a six-member board of commissioners, elected by navigation district voters to six-year terms. The port maintains complete facilities to handle a variety of cargo, including, but not limited to, forest products, grains, project cargo, military, bagged goods, aggregate, metals, and wood chips. The port has a total of 6,088 linear feet of harbor front, with eight ship berths, wide concrete aprons, and a constant minimum water depth of 36 to 40 feet at mean low tide at the face of all docks. However, this port does not play a major role in fabrication and shipbuilding.

The principal ship channels serving the region are the Sabine River and the Neches River, which form the Sabine-Neches Waterway and provide access to the Gulf of Mexico through Sabine Pass, and the Gulf Intracoastal Waterway. The Intracoastal Waterway links area fabrication and shipyards to other principal transportation corridors, such as the Mississippi River and the Houston Ship Channel.

6.1.3. Current Industrial Profile

Chapter 1 of this volume describes the study's typology for characterizing shipbuilding and fabrication yards based on company ownership. The Golden Triangle's yards are representative of all four types (Figure 6.3): yards that service or fabricate only rigs and platforms, yards that service or fabricate only vessels, yards that service or fabricate both, and small specialty shops. The yards range in size from small specialty fabrication yards that may employ fewer than 50 workers at any given time to mid-level corporate yards that employ a few thousand employees during peak periods of operation. Due to the cyclical nature of the industry, the number of employees on a yard may fluctuate significantly. The yards that deal specifically with shipbuilding are for the most part smaller; the largest have a few hundred employees and the smallest yards employ fewer than 10 workers. The repair yards are also small; all of the yards contacted by the field research team had fewer than 100 employees.

Figure 6.3. Fabrication and shipyards in the Golden Triangle study area.

Map was created in 2011 using data packages included with the ArcGIS software suite. Sources used to create these data layers included: ArcWorld/ESRI, National Atlas of the United States, Tele Atlas, U.S. Bureau of Transportation Statistics, U.S. Census, and U.S. Geological Survey. Additional shipyard data assembled by Ben McMahan, 2008-2010, from multiple sources - primarily company websites, business directories, and ethnographic data collection.

The Golden Triangle's rig and platform refurbishing yards, particularly in the Sabine Pass area, differ significantly from crewboat and supply boat repair because they require a much greater infrastructural commitment. Refurbishing yards require water-based components, such as deep channel access close to the Gulf of Mexico without overhead obstructions (e.g., bridges and power lines), large slips for parking the rigs, and cranes and drydocks capable of lifting portions, or even the entire rig, during the repair and refurbishment process.[22] The yards include parking areas to accommodate large crews and their vehicles, covered and uncovered work areas, as well

[22] The Golden Triangle's liquefied natural gas (LNG) facilities have been sited in close proximity to the rig refurbishment row of Sabine Pass. Large ships are needed to transport LNG.

as large storage areas for components and other structural steel that will eventually be placed on a rig or platform, or hauled away for scrap.

6.2. HISTORY

The Golden Triangle has been producing vessels since before World War II, but production peaked during the war (see Figure 6.4). Immediately after the war, offshore fabricators began to construct and assemble drilling rigs. Activity fluctuated, reflecting the petroleum industry's upturns or downturns and coming to a halt during the 1980s downturn, but rebounding in the 1990s and again after the 2005 hurricanes.

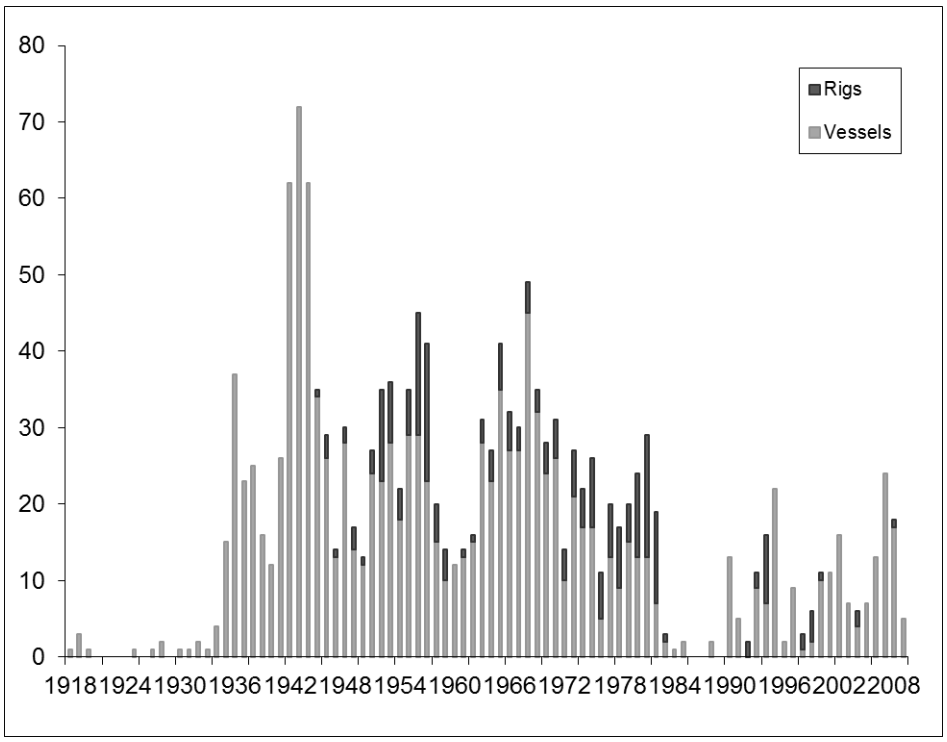

Figure 6.4. Number of rigs and vessels produced at yards in the Golden Triangle (Beaumont, Orange, and Port Arthur), 1940-2010.

Source: Colton n.d.a.; Note: Rig data are incomplete.

6.2.1. Maritime and Shipbuilding History to 1945

Following the great Spindletop discovery in 1901, oil tycoons flocked to southeast Texas to participate in the new bonanza. Meanwhile, the timber and grain industries, which had dominated the regional economy prior to Spindletop, experienced an increase in production. As the economy and population rapidly expanded, lumber firms, such as the famed Lutcher-Moore concern and John Kirby, harvested more of the region's long leaf yellow pine to feed the growing markets for materials to build ships, derricks, homes, and buildings (Williams 1988).

Land, lumber, oil, and railroad investors, whose capital investments spurred the region's economic development, also led efforts to dredge the ship channels and establish water access for the three key cities. Completion of federally-funded ship channels in Port Arthur (1899), Beaumont (1916), and Orange (1916), and continuous dredging of the Sabine Pass to facilitate

connection with the Gulf of Mexico created an opportunity for many businessmen and shipbuilders to open shipyards along the water ways. In 1916, the District of Sabine "ranked first among the nation's oil ports" (Alperin 1977).

Early outgoing maritime trade from the Sabine area used steam vessels and wooden sailing ships to transport goods. The early shipyards employed many local workers who had experience with timber in the saw mills and excellent carpentry skills. Captain Joe Weaver, who opened his shipyard in 1898, was one of the best-known early wooden shipbuilders. By 1916, Weaver's shipyard was the "largest and best equipped shipyard on the Gulf Coast west of Mobile" (The Orange Leader 1985). During World War I, Weaver's yard, along with Swailes Shipyard, Orange Maritime Corporation, International Shipbuilding Company, Beaumont Shipbuilding & Drydock Company, and Southern Drydock and Shipbuilding Company, built wooden sailing vessels and steamships for the War Department. Captain George Levingston, another famed shipbuilder from the Golden Triangle, opened his shipyard after the war in 1919 to build wooden tugboats and barges for the emerging oil industry (Williams 1988),[23] and many of these shipyards remained active throughout the 20th century.

For Gulf Coast shipyards, the late-1930s marked a transition away from wooden shipbuilding to steel. Firms such as Levingston Shipbuilding and Gulfport Shipbuilding took advantage of government financing and new innovations in welding technology to expand their businesses (Peebles 1980). By the late-1930s, all new tugboat and barge orders at Levingston Shipbuilding required steel-welded construction (Williams 1988). Bruno Shultz, who started Gulfport Boiler and Welding Works (later Gulfport Shipbuilding) in Port Arthur, Texas, built a prototype for the first all-welded steel barge out of scrap metal. His experiment "paved the way for the building of all steel-welded barges and sea-going vessels" (Schnuerle 1991). In the 1940s, welding replaced riveting as the preferred technique for ship construction and revolutionized the shipbuilding industry at a crucial period (Peebles 1980; Life 1941).

World War II dramatically expanded the number of Golden Triangle shipyards (see Figure 6.5). With federal financing available to shipbuilders through the Merchant Marine Act of 1936, national companies opened new yards in the region to build hundreds of Navy ships and tank barges, while older local firms built wooden minesweepers and tugs for the military. President Franklin Roosevelt's emergency shipbuilding program offered lucrative contracts to these companies, while federal dollars helped to fund channel and waterfront improvements in the region. Gulfport, for example, built dozens of tugs for the war effort. Schultz's tugs not only supported the Allied invasion of Normandy, but they also shuttled valuable crude from the local oil fields to the refineries along the northern Gulf Coast (Schnuerle 1991). The larger firms, such as Levingston and Consolidated Shipyard, built hundreds of vessels, including Navy destroyers, destroyer escorts, and liberty ships. Consolidated, the region's largest shipbuilder, employed as many as 27,000 workers during peak wartime production periods. In all, the Orange shipyards employed nearly 60,000 people during the war, nearly three-times the town's population before the war (Williams 1988). Wartime installation of new mass production equipment and the training of skilled welders and fitters, many of them from the Louisiana Cajun country, enabled local shipyards to transition quickly and more efficiently to post-war commercial shipbuilding.

[23] George Levingston was the son of Samuel H. Levingston from Northern Ireland who, with his siblings, purchased Charles Baxter and John Fielding's old shipyard. The Levingstons founded J. H. Levingston Shipways, the forerunner to Levingston Shipbuilding Company.

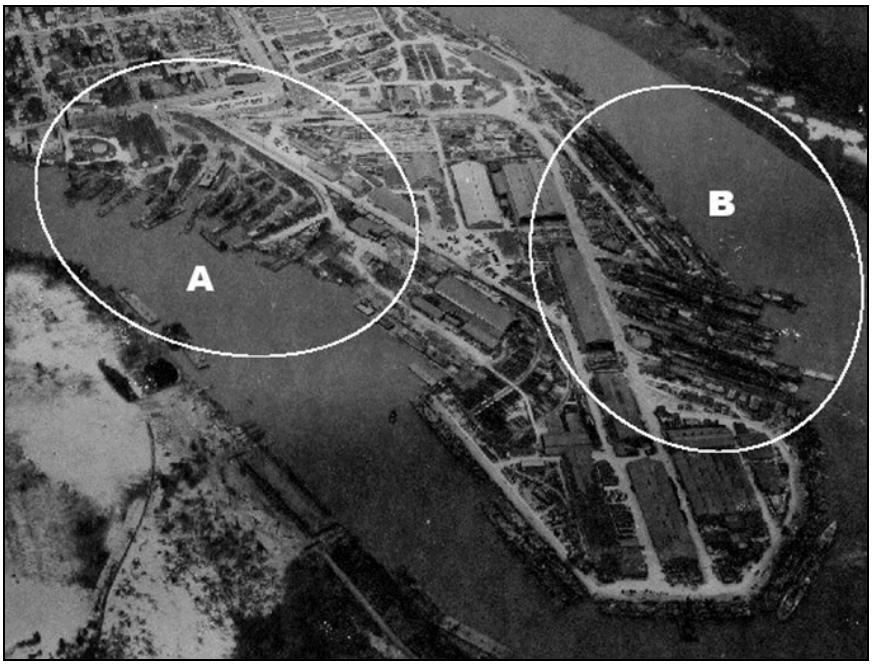

Figure 6.5. Aerial view of Orange World War II shipyard (Consolidated Steel Corp.).

Source: USS Orleck Naval Museum 2011.

6.2.2. Shipbuilding and Fabrication in the Postwar and Early Offshore Oil Era, 1950s-1980s

After World War II, wartime Golden Triangle shipyards and their workers ramped up to support the growing offshore oil and gas industry. Many yards simply converted from defense contracts to commercial contracts, but several new firms moved in where others had left. With infrastructure already in place, a skilled workforce left over from wartime, and plenty of returning GIs hungry for jobs, the Golden Triangle launched a new era of commercial shipbuilding and fabrication.

Two southeast Texas shipyards emerged as giants in the offshore marine construction industry. In 1947, Bethlehem Steel Corporation entered the Gulf Coast shipbuilding market by opening a major facility in Beaumont, Texas, specializing in designing and building tankers, derrick barges, and mobile drilling rigs. Bethlehem pioneered many industry firsts, notably the first oil-well drilling barge (1949), one of the first mobile jack-up rigs (1954), and the largest non-propelled barge (1958). Bethlehem, along with LeTourneau, Inc., developed the mobile jack-up rig, a revolutionary concept for offshore drilling. Modeled after Colonel Leon B. Delong's self-elevating platforms used during World War II, Bethlehem's jack-up rig, *Mr. Gus* (1954), and later, *Mr. Gus II* (1957), were the first mobile drilling rigs capable of operating in water depths up to 100 feet and in hurricane conditions (Offshore Operations 1954a).

As drilling on the outer continental shelf (OCS) developed over the next 20 years, Bethlehem constructed no fewer than 68 rigs at its Beaumont facilities, including mat-supported jack-up rigs and jack-up components, and some semi-submersible drilling units (Bethlehem Steel Building 2009). By the mid-1970s, the company's fleet of jack-ups rigs, built in Beaumont, Texas, and at Bethlehem's new yard in Singapore, were working in water depths of 375 feet (Offshore Magazine 1975; Offshore 1970; Offshore 1971a; Wall Street Journal 1970). When demand for

drilling peaked in the late-1970s, the company employed more than 3,000 workers in the Golden Triangle. However, labor battles, a declining U.S. steel market, bribery indictments, and an industry downturn created major financial problems for Bethlehem and its parent corporation throughout much of the 1980s (Estes 2008; Wall Street Journal 1980; Salpukas 1980).

Levingston Shipbuilding, perhaps the most famous shipyard from the Golden Triangle's storied shipbuilding past, experienced a major post-war conversion to commercial vessels and became one of the leading shipyards servicing the offshore oil industry. In the late-1940s, the company expanded its facility on Harbor Island and installed side-launching ways to build and launch tugs, barges, platforms, drill barges, tenders, pipe-lay barges, and derrick barges. By the 1960s, Levingston began constructing semi-submersible drilling rigs and self-propelled drill ships, such as the *Glomar Challenger*, a scientific ship used for deep-sea exploration. These new vessels could drill in water depths up to 1,000 feet (Offshore 1965; Offshore 1966). Levingston is an active builder of multiple types of drilling rigs, including its own class of mobile jack-ups.

In the 1970s, Levingston expanded operations both at home and overseas. It purchased Gulfport Shipbuilding in Port Arthur and, as already noted, opened a facility in Singapore. Designers pushed the technological limits of the new generation of semi-submersibles, capable of operating in more than 2,000 feet of water (Offshore 1971b). In the mid-1970s, after suffering from financial problems, Levingston sold out to Ashland Oil (Wall Street Journal 1972). A forerunner in the offshore marine construction industry and a symbol of pride to the residents of Orange, the Levingston shipyard, under new ownership, continued building and repairing offshore marine vessels until the downturn of the 1980s finally forced the shipyard to close.

While the two big fabrication giants in southeast Texas built heavy-duty equipment and vessels in response to post-war petroleum industry expansion into deeper waters offshore, smaller and mid-sized shipyards took advantage of the boom in inland barge activity. These mostly family-run shipyards, such as Sneed Shipbuilding, Gulfport Shipbuilding, and Burton Shipyard, built a fleet of barges and towboats for Sabine Transportation Company, Higman Towing Company, Hormes Towing Company, and firms like them (Hartman 2007). O.W. Burton, owner of Burton Shipyard, was another well-known pioneer of the Golden Triangle's shipbuilding industry, and in the early-1950s built some of the offshore industry's first supply vessels for the (Offshore Operations 1954b). Later in 1974, Tommy Clary founded Orange Shipbuilding to build tugs and towboats, for barge and coastal transport; the company later diversified its operations to include vessels for use in offshore services.

6.2.3. Downturn of the 1980s

In the first years of the 1980s, fabrication yards all across the Gulf Coast struggled to keep pace with the enormous volume of new rig and platform orders and deliveries. High day rates and high oil prices produced a historic boom market in the Gulf of Mexico. However, by 1982, the number of new rigs, platforms, and workboats that entered the market outstripped the industry's demand for them (Offshore Magazine 1983. A step drop in oil prices during the next two years, precipitated by an oncoming global recession, replete with a decline in world-wide demand for oil, created a major downturn in the already saturated rig market and adversely affected the shipbuilding and fabrication industry.

When the industry collapsed and broke apart in the mid-1980s, many of the Golden Triangle's major shipyards closed their doors, and the dependable, skilled labor force—including many second- and third-generation shipbuilders—left town or found a new type of work. Sabine Pass resembled an iron graveyard as the big companies were forced to stack dozens of idle

drilling rigs that had no work (Estes 2008). Other problems, such as the reduced productivity of a striking workforce, overseas competition, termination of federal government subsidies for shipbuilders under President Reagan, and increased construction costs, contributed to the decline of shipbuilding in the Golden Triangle as well (Schnuerle 1991). With massive layoffs in the shipyards, refineries, and chemical plants, the Golden Triangle suffered double-digit unemployment (Reinhold 1984). Smaller firms kept their skilled labor forces employed by surviving strictly on ship repair work. Meanwhile, programs such as the John Gray Institute at Lamar University, founded in 1981, provided technical training in welding and other skilled trades for workers waiting out the downturn (Lamar University 2009). However, Orange Shipbuilding survived the downturn and then began to prosper in the late-1980s by taking government contracts set aside for small businesses (Colton n.d.b).

Bethlehem Steel Corporation, as already noted, one of the larger construction firms on the Gulf Coast, struggled to stay afloat in the 1980s. The company's shipyards in Port Arthur and Beaumont entered a period of near inactivity. After converting two ships for the U.S. Navy in 1984 and 1985, Bethlehem's new orders ran out and its backlog for new rig construction had long since dried up. At the same time, Bethlehem also confronted problems with manufacturing steel, its core business. Steel prices began to drop in the 1980s. With growing overseas competition, increased steel imports, and a sharp decline in tubular steel used in the offshore industry, the corporation showed continuous losses across the board for 1982-1985 (Hicks 1986). According to John Estes (2008), former Bethlehem executive and shipyard manager, unwise investments in building large blast furnaces, rising labor costs, and pension plan troubles led to the steel giant's eventual demise. In 1988, Bethlehem put its Texas shipyards up for sale. Maurice Meyers, Mayor of Beaumont, stated with some anxiety that closing the yard "would be a serious economic blow to Beaumont" (Stewart 1988). A year later, Bethlehem sold out to Trinity Industries.

Levingston Shipbuilding had similar troubles withstanding the decline in the rig market, while maintaining a successful business strategy during the boom-bust cycle of the 1970s and 1980s. The marine construction industry's overall decline, coupled with the acquisition of an East Coast shipyard, put Levingston in a tight financial squeeze from which it did not recover. Levingston delivered its final rig to Noble Drilling in 1982 and closed its doors three years later.

6.2.4. Deepwater Gulf of Mexico, 1990s to 2008

The 1990s marked a period of revitalization in the marine construction industry. With the coming of deepwater activity in the Gulf of Mexico, the North Sea, and elsewhere, the Golden Triangle's dormant shipyards came alive, primarily to compete in a new market for rig refurbishment and conversion.

Texas Drydock, Inc. (TDI) became a pioneer in the rig conversion industry. Founded by Don Covington, the last president of Levingston Shipbuilding, TDI grew into a major company with 1,500 employees working at four shipyards, including the old Weaver yard, the former Gulf Cooper yard, and the former Bethlehem Sabine Offshore yard in Port Arthur. TDI specialized in repairing and refurbishing offshore equipment and converting second-generation drilling rigs into fourth-generation rigs to drill in deeper water (Covington 2008). Halter Marine Group purchased TDI in 1997 and formed TDI-Halter. After a 1999 merger with Friede Goldman, a New Orleans-based engineering firm, TDI had financial trouble and later declared bankruptcy. In 2002, Don Covington rejoined his two sons at Beacon Maritime, their new shipyard in Orange. The Covington brothers, Russell and Guy, rebuilt the once-abandoned 100-acre Harbor Island

facility, originally home to Levingston Shipbuilding, and continued doing business in the repair/conversion market for drilling rigs and related equipment (Beacon Maritime 2009).

Conrad Industries of Morgan City purchased Orange Shipbuilding in 1997 to expand its construction capacity and capabilities. The company produces a variety of marine vessels for the U.S. government and other clients, modular components for offshore drilling rigs, as well as floating, production, storage and offloading vessels (Conrad Industries 2006).

In 2005, the Golden Triangle received a near direct hit from powerful Hurricane Rita. Efforts to bounce back resulted in a surge of economic growth and development by 2007. Several multi-million dollar projects, including new LNG facilities, were expected to lure thousands of new construction workers to the area, leading local leaders to claim this period of oil-related growth the "Spindletop of this Century" (SD08 2007; SD10 2007). The shipyards and fabricators, including Beacon, Signal International, Orange Shipbuilding, and a handful of smaller family-run firms, braced for the expected increase in work and manpower.

However, during the study period, the region was affected by another significant hurricane storm event, Hurricane Ike in 2008, and a major global recession. The sudden drop in oil prices that followed led to an economic downturn in the region and resulted in layoffs (Beaumont Enterprise 2008, 2009; Collins 2009a; Mann 2009). The three main fabricators remaining in the Golden Triangle—Beacon, Signal, and Orange Shipbuilding—struggled to keep their diminished skilled workforce working and their doors open.

6.3. Fabrication and Shipbuilding in the Context of Other Occupations and Industries

As noted above, in addition to its shipbuilding and fabrication industry, the Golden Triangle hosts refineries, petrochemical plants, and other facilities tied to oil and gas. Consequently, like its other petroleum industry-dependent neighbors, southeast Texas suffered from the 1980s worldwide collapse of oil prices. The area's economy was significantly depressed throughout the decade and, despite a short revival in 1990 and 1991, remained depressed through 1996. By the end of the 1990s, however, the economy experienced a significant and sustained upturn. The growth was moderated by the national economic slowdown following September 11, 2001 and the impacts of the later hurricanes, but the region's economy, based primarily on the petrochemical industry, has generally remained relatively strong.

In 2007, leaders and residents of Golden Triangle communities expressed great optimism that an industrial boom was on the way. The boom was expected to occur during 2007 and 2008, when post-Katrina fabrication and shipbuilding demand was still high, and it was anticipated that business expansion would generate tens of thousands of short-term jobs, as well as a smaller number of permanent jobs. Labor demand associated with fabrication and shipbuilding had begun to taper off during 2008, after Hurricane Ike struck and caused considerable damage. Ike's adverse effects, as well as the general economic downturn in the second half of 2008, put a damper on refinery and plant expansion, and caused business slowdowns and closures in the fabrication and shipbuilding industry, due to loss of materials, facility damage, cancelled contracts, and loss of workers. The recession finally reached southeast Texas with the tapering off of post-hurricane construction and plant expansion (Koonce 2009). Of the three major refinery expansion and upgrade projects that were moving forward, one has been postponed indefinitely (Bourdier 2011).

Recent efforts to diversify the region's economic base while building on its core strengths have also included attempts to encourage development of liquefied natural gas (LNG) (see

Appendix B). In 2006, for example, Chicago Bridge and Iron purchased Trinity Industries' Trinity Beaumont yard to be used for LNG construction. Although applications for LNG permits were submitted for Texas facilities from the Coastal Bend to Orange and Sabine Pass, at the time of fieldwork for this study, the proposed southern facilities were on hold, and all activity was expected to occur near the Golden Triangle. As of summer 2009, one facility had been completed, having gone online in May 2008, and the other was near completion, but had fallen behind schedule, with study participants attributing the drop in the price of natural gas in conjunction with the overall economic downturn as slowing the push to get a second facility online, not to mention the impact of Ike in 2008 (Meaux 2010). Thus, by the end of 2009, there were indications that the region's local government officials and private firms might begin to explore other ways to diversify its energy production (Wallach 2009).

At the beginning of fieldwork for this study, some local leaders viewed returning to a greater emphasis on shipbuilding and fabrication as part of the region's economic diversification strategy, and efforts were being made to recruit a shipyard for an unused parcel of land on the water near downtown Orange. The recruitment was successful. Bludworth Marine opened a new drydock repair and vessel fabrication facility on grounds that had once been cow pasture, and the yard was actively working in new fabrication and repair as of 2009. The new operation occupied a somewhat different niche than the other major fabricators in the area, offered new jobs and additional tax revenues, and represented diversification away from the petrochemical plants that are the area's most prominent industrial operations.

Outside the petrochemical and shipbuilding/fabrication industries, the Golden Triangle's largest employers are city and county governments, school districts, prisons, universities and colleges, and hospitals. Construction, residential and commercial, is also a significant economic activity, especially in post-hurricane recovery periods. Finally, Port Arthur serves as a significant commercial fishing port (see Table 6.1). However, storms of 2008 destroyed many of the small-scale fishing operations, including local ice facilities and small boats, and this, combined with the high price of diesel at time of fieldwork, meant that local fishing was not a prominent part of the local landscape.

Table 6.1.

Commercial Fishery Landings and Value at Port Arthur

	Port Arthur	
Year	Quantity (million Pounds)	Value (million dollars)*
2010	19.6	47.4
2009	16.0	27.0
2008	14.9	39.0
2007	17.4	39.0
2006	25.0	42.8
2005	17.8	36.2
2004	19.4	38.9
2003	17.5	30.1
2002	14.9	30.8
2001	14.6	36.8
2000	17.0	49.3**
1999	8.9	22.4
1998	14.6	32.6

*Note that value varies by species, so there is no direct correlation between quantity and value.
**Port Arthur was in the top ten U.S. ports in value in this year.
Source: National Marine Fisheries Service (NMFS) n.d.

6.4. INFLUENCE OF THE INDUSTRY ON THE PHYSICAL FEATURES OF THE REGION

Shipbuilders and fabricators have extensively influenced the Golden Triangle's physical layout and infrastructure. Industrial activity is concentrated along the water bodies to the north of Corpus Christi along the southern edge of Nueces Bay and near the port; across Corpus Christi Bay along the circuit surrounding Ingleside and known as the Ingleside Point loop; on relatively small parcels bordering La Quinta Channel; and on the Jewell Fulton Harbor, which, in turn, connects to La Quinta Channel. Fabrication takes place, for the most part, in the southern part of the area, closer to Ingleside, because of better access to deep water, whereas support industries are located to the north and in Aransas Pass. Utilizing land use classifications from the National Land Cover Database (NLCD, completed in 2001), Figure 6.6 characterizes land use types found and distributed in the Golden Triangle. The figure clearly shows the concentration of industrial and heavy commercial land use throughout the region.

The maps (Figures 6.6a. to 6.6d) highlight the local distributions of several industries discussed in this chapter. Especially noteworthy are the clustering of refineries and shipyards along the Sabine Neches Waterway in Port Arthur, the clustering of petrochemical plants and shipyards along FM 1006, "chemical row," and near downtown Orange, and the large rig refurbishing and fabrication yards in Sabine Pass.

The Golden Triangle's natural boundaries are the Gulf of Mexico to the south, the Louisiana state line (i.e., the Sabine River) to the east, and Interstate 10 to the north. Beaumont and Orange, Texas, sit along the 1-10 corridor, whereas Port Arthur lies to the south. The three cities are interconnected by a confusing maze of state and county highways, which form bridges, for the cities and their outlying suburbs, through and over the numerous bayous, marshes, and lakes that dot the landscape.

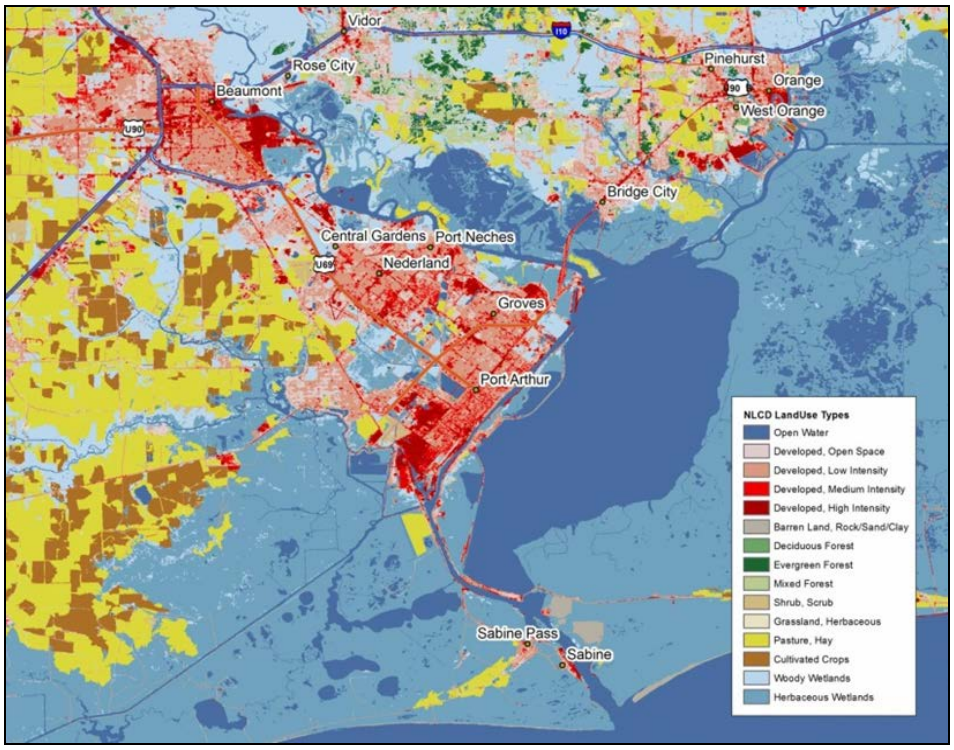

Figure 6.6.a. Land Use Classifications from the 2001 National Land Cover Dataset (NLCD).

Source for all: Multi-Resolution Land Characteristics Consortium 2001.

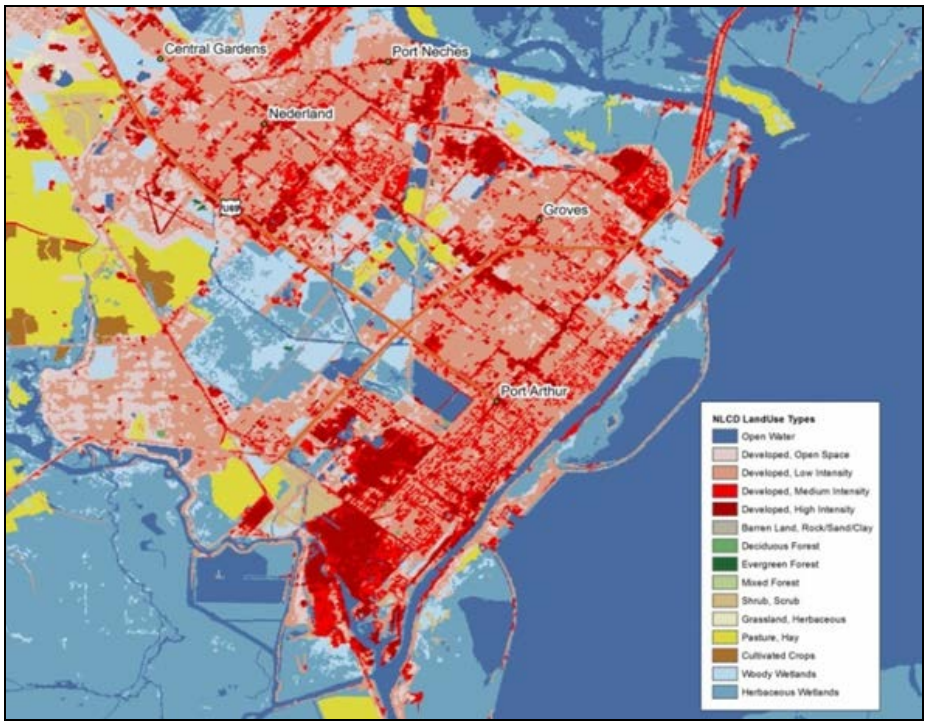

Figure 6.6.b. NLCD for Port Arthur

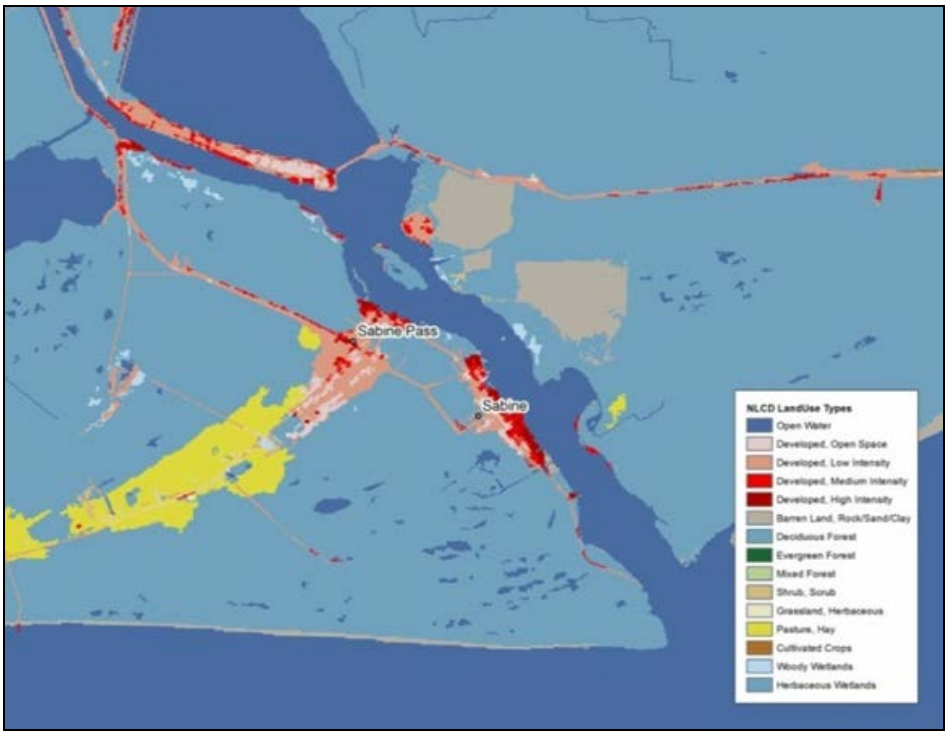

Figure 6.6.c. NLCD in Sabine Pass, TX

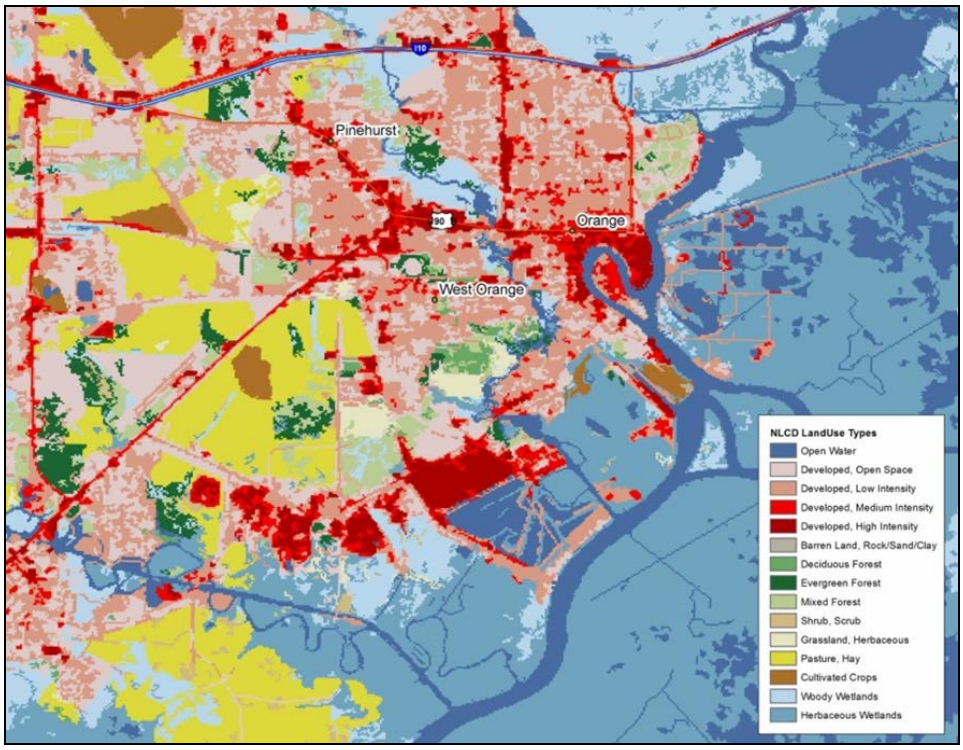

Figure 6.6.d. NLCD in Orange, TX.

Land available for the fabrication and shipbuilding industry is neither owned nor used consistently across the Golden Triangle. Instead, land varies from closely guarded, privately-owned parcels to open spaces used to graze cattle, for which city officials were actively recruiting a new shipyard when fieldwork was conducted. A large land area partially accounts for this irregular land ownership/land use pattern. The Golden Triangle covers more than 30 square miles from Sabine Pass to Orange, and includes the two separate counties, Jefferson and Orange. The pattern also reflects differences in land access and attitudes toward development across the region. Access to water is a critical component of a shipyard's or a fabrication yard's establishment and operation, and many longstanding yard sites have good water access and infrastructural connections. Yet, utilities, municipal services, and roads are also necessary for a yard's success. Given this extensive set of infrastructural requirements, it is not surprising that many yards have retained the same functions—namely fabrication and shipbuilding or repair—since World War II, despite changes in company ownership and the Golden Triangle's demographic shifts.

6.4.1. Waterways, Roadways, and Airports

The principal ship channels serving the Golden Triangle are the Sabine River and Neches River, which, together, form the Sabine-Neches Waterway, and provide access to the Gulf of Mexico through Sabine Pass and the Gulf Intracoastal Waterway. The Intracoastal Waterway, in turn, links fabrication and shipyards to other principal transportation corridors, such as the Mississippi River and the Houston Ship Channel. The Texas Legislature created the Sabine River Conservation and Reclamation District, and the Sabine River Authority in 1949 to control, store, preserve, and distribute waters of the river and its tributary system for useful purposes (Sabine

River Authority of Texas 2011). The legislature accorded the authority jurisdiction over the entire Sabine River Watershed, including all of its tributary streams in the State of Texas—that is, all or parts of 21 counties. The Sabine River Authority is governed (i.e., its affairs are managed and controlled) by a Board of Directors, whose nine members serve six-year terms. Three members are appointed by the Governor of Texas on a rotating basis every two years. Directors must reside in a county wholly or partially within the Sabine River watershed.

The Golden Triangle is served by both federal and state highways. Orange and Beaumont lie along Interstate 10. State Highways 87 and 73 connect Orange to Port Author, and Interstate Highway 69 links the city to Beaumont.

The Southeast Texas Regional Airport handles commercial aviation and allows people to make travel connections via land, air, and water. It lies in close proximity to Interstate 10, 20 local trucking terminals, and three Class A rail lines with connections to the deepwater ports in Beaumont, Port Arthur, and Orange. The regional airport is approximately 90 miles from Bush Intercontinental Airport and Hobby Airport in Houston.

6.4.2. Housing, Commuting, and Traffic

The Golden Triangle's urban areas include historic housing sites as well as more recently built housing developments, and suburban bedroom communities are located between urban areas. Locally-specific and population-specific housing shortages exist. Residents and community leaders noted that, while housing for above-median income professionals in the suburban bedroom communities is readily available and has even increased, housing for other income groups, especially in the urban cores, has declined. These study participants added that some middle-income housing became available after the exo9dus of people associated with the petroleum industry's 1980s downturn, but affordable housing for workers remains in short supply.

The 2005 and 2008 hurricanes destroyed or rendered uninhabitable a substantial amount of the region's housing stock. Population declines in 2006 offset some of these housing losses. However, study participants mentioned several factors that tightened the housing market. One was the post-Katrina influx of people from New Orleans. Another was the arrival of many workers seeking employment when refineries and LNG companies expanded operations, or when construction work became available as houses, businesses, and hotels were built to support expected population growth. With regard to rental units, these factors led to a sharp upturn in the prices, especially following Hurricane Rita. The long-term impact of such changes on all housing in the Golden Triangle is not yet known. However, the economic downturn and slow pace of recovery following the 2008 storms may have temporarily alleviated the housing shortage.

In 1970, the majority of housing units (74,904 or 70.3%) in the Beaumont-Port Arthur MSA were owner-occupied, while 31,685 units (29.7%) were renter-occupied (see Appendix I, pp. 28 - 32). Although the number of homeowners increased substantially by 2007, the overall proportion of homeowners actually went down: 97,507 units (67.4%) were owner-occupied in 2007 and 47,055 units were renter-occupied (32.6%). Port Arthur had the highest rate of home ownership when fieldwork was conducted. However, Port Arthur appears to be rapidly losing ground in this regard and it may be eclipsed by Beaumont in the coming years (see Figure 6.7).

In 1970, the proportion of vacant units in the Beaumont-Port Arthur MSA was 7%, but in 2007, it nearly doubled to 13%. As of 2000, the percentage of vacant units was highest in Port Arthur (17%), followed by Beaumont (13%) and Orange (12%). The lowest vacancy was in the suburbs (8%).

Housing prices fluctuated significantly between 1970 and 2007 in the Golden Triangle, showing a pattern similar to that found in other regions along the Gulf Coast. However, the Triangle's decreases were greater, and its recovery in the 1990s slower, than in places such as the Central Coastal Bend. Meanwhile, real gross median rent within the Golden Triangle increased in all decades since the 1970s except the 1980s. It rose 36.1% from 1970 to 1980, 0.4% from 1990 to 2000, and 13.9% during 2000-2007, but fell 4.3% in the 1980s. The most expensive of the region's three principal cities for renters was Beaumont with a gross median rent of $615 per month, while Port Arthur was the least expensive with a gross median rent of $492.

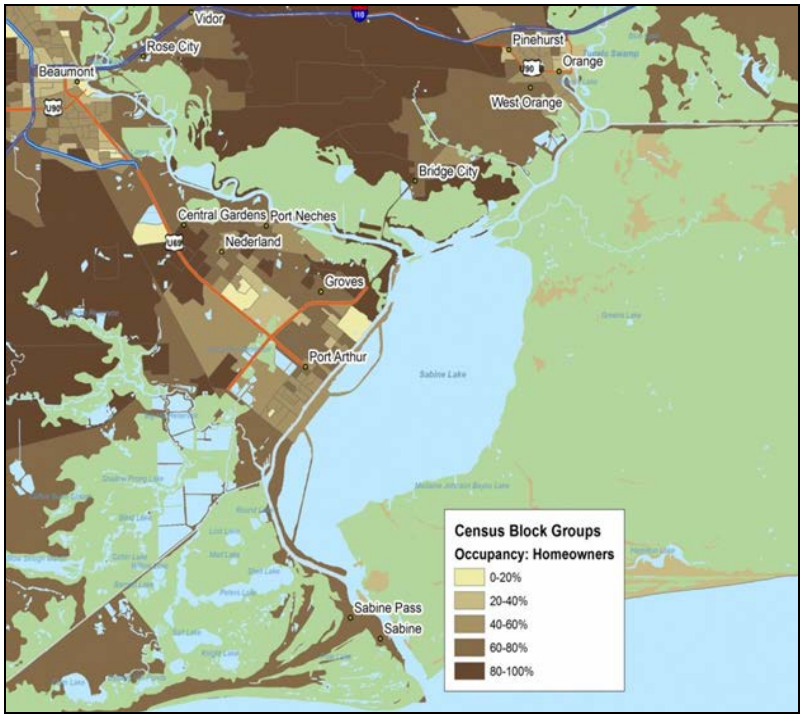

Figure 6.7. Housing occupancy: Homeowners.

Source: U.S. Census Bureau 2000 Summary File 1; U.S. Census Bureau 2010 Summary File 1.

Between 1970 and 2000, the proportion of people with rents in the lowest 20th national percentile decreased from 38.7% to 32.7%. For the same time period, the proportion of people with rents in the middle 60th national percentile increased from 52.1% to 62% in 2000. The proportion of people with rents in the upper 20th national percentile fell from 9.3% in 1970 to 5.3% in 2000. As of 2000, Port Arthur had the highest proportion of people with rents in the lowest 20th percentile (48.7%).

The real median home value increased 41.5% during this same period. Although the value dropped 15% when the economic tumult of the 1980s occurred, the value increased by 12.0% in the 1990s and 11.9% during 2000-2007. The median home value for the Beaumont MSA in 2007 was $79,339 as compared to $83,610 for the City of Beaumont. With a median home value of $41,600, Port Arthur had the least expensive housing. Overall, home values in the region have increased, but they have not kept pace with values in other U.S. locations. The proportion of people with home values in lowest 20th national percentile increased from 38.9% in 1970 to 57.3% in 2000; the proportion with home values in the middle 60th national percentile decreased

from 55.5% in 1970 to 39.7% in 2000; and the proportion with home values in the upper 20th national percentile decreased from 5.6% in 1970 to 3% in 2000.

The Golden Triangle's three major cities display significant differences in housing affordability, with Port Arthur and Beaumont at the extremes. As of 2000, in Port Arthur, 82.6% of the home values were in the lowest 20th national percentile, whereas in the city of Orange, 63.6% of the home values were in the lowest 20th national percent, and in the city of Beaumont, 57.3% of the homes values were in the lowest 20th national percent. In the Beaumont-Port Arthur MSA, the number of housing units has increased and the average number of building permits has increased across the MSA.

The Golden Triangle enjoys a commuting surplus, as the number of commuters leaving the region is less than the number of commuters entering the region (see Table 6.2 and Appendix I, pp. 32 - 33).

Table 6.2.

Work Commuting Patterns by Decade for Orange and Jefferson Counties from 1970 to 2000

County		1970	1980	1990	2000
Orange	Staying	14,749	22,093	20,120	19,675
	Entering	3,251	5,509	5,484	7,283
	Leaving	7,464	11,184	12,077	14,714
Jefferson	Staying	79,031	93,785	90,591	88,460
	Entering	11,433	20,162	23,633	30,402
	Leaving	3,681	7,049	6,601	8,478

Source: U.S. Census Bureau, Journey to Work and Place of Work Data

Manufacturing presently plays a larger role than other industries in creating this commuting surplus, attracting many more workers from outside the region for manufacturing jobs than those who exit the region for the same employment elsewhere. In Jefferson County, the total number of people working increased 11.9% from 70,031 in 1970 to 88,460 in 2000. Meanwhile, the number of Jefferson County residents commuting to other counties increased 130% from 3,681 people to 8,478. However, this figure represented only 8.8% of the total workforce. Jefferson County residents commuted primarily to four counties: Orange, Harris, Hardin, and Chambers. In 2000, the number of nonresidents working in Jefferson County increased 166% and represented 25.6% of the county's total workforce, up from 12.6% in 1970. Nonresidents commuted to Jefferson County primarily from four counties, as well—Orange, Jasper, Hardin, and Harris—three of them the same as counties to which Jefferson County residents commuted.

In Orange County, the total workforce increased 33.4% during 1970-200, from 14,749 to 19,675. For the same period, the proportion of Orange County residents commuting increased 97%, from 33.6% to 42.8%. Although a large proportion of Orange County residents commute to their jobs, they were working primarily in Jefferson County. Nonresidents commuting into Orange County increased 124% in 2000 and accounted for 27% of the workforce, up from 18% in 1970. They commuted from Jefferson County, Newton County, Hardin County, and Calcasieu Parish, Louisiana.

Combining Orange County and Jefferson County into one unit for analytical purposes, the data show that only 4.9% of the total workforce leaves the unit. The two primary destinations for the commuters are Hardin County and Harris County. Secondary destinations are Jasper County and Calcasieu Parish, Louisiana. Approximately 14% of the combined Orange-Jefferson County workforce commutes from outside these two counties. Hardin County supplies the most labor, followed by Jasper County, Harris County, Newton County, and Calcasieu Parish, Louisiana.

Four sectors lured workers away from Jefferson County and Orange County: services, manufacturing, construction, wholesale/retail trade, and state and local government. The largest sectors attracting commuters to the two counties are services, construction, manufacturing, and wholesale/retail trade. If Jefferson-Orange County is considered a single analytical unit, the number of manufacturing workers commuting from outside the unit drops to 16.7% of all workers. These manufacturing workers commute from a variety of places—10 parishes in Louisiana and 16 counties in Texas. Manufacturing relies on and attracts more commuters than the regional average for all other sectors combined.

Ethnographic data suggest that two factors help explain these patterns. First, many workers in the fabrication and shipbuilding industry are highly mobile, moving from yard to yard in response to offers of higher wages. Managers referred to the "cell phone circus" (BM027 2008), the phenomenon where workers would pack up and move to a yard that was paying better, having become aware of the higher wages via their cell phones. Such moves among employers are unlikely to be accompanied by moves to new homes because finding a new home is challenging and because the worker may change employers again, perhaps even ending up back at the former jobsite, in a short period of time. The second factor contributing to high levels of commuting in the industry is that professionals consistently lived outside the industrial areas where yards and fabrication shops are located, and often outside the major metropolitan areas as well. Managers, engineers, and other white-collar employees reported living in the bedroom communities, such as Kountze, Lumberton, and Pinehurst or in unincorporated suburbs north of Beaumont and Orange, contributing to the commuter workforce.

Within Jefferson and Orange counties, the intermingling of residential, commercial, and heavy industrial activities means many roads are subject to multiple types of use (see, again, Figures 6.6a to 6.6d above). It is not uncommon, the field researchers observed, for people to walk or bike, cars to drive, and 18-wheelers to haul on the same stretch of road. Residents and workers who participated in this study frequently commented on traffic problems and accidents, especially those involving large, commercial trucks. In addition to damage to passenger vehicles and danger to pedestrians and other drivers, heavy, multipurpose traffic on local roads has significant, often adverse, impacts. A distinctive cross-community narrative has emerged concerning routinely thick traffic flows (including heavy trucks and machinery), periodic traffic jams, and occasional accidents on the roads. The field research team got the sense that business and industrial growth was rapidly outpacing the growth and development of local civic infrastructure.[24] Public transportation is severely limited throughout the Golden Triangle, and local leaders have considered augmenting existing bus systems. Even Port Arthur's public bus system does not extend beyond the municipal boundaries, which means transportation to the plants and refineries, or between Port Arthur and its numerous suburbs, is all but impossible

[24] The 2008-2009 economic downturn reduced traffic, especially the large trucks involved in hauling components for refinery expansions.

without some sort of private vehicle. At the time of fieldwork for this study, none of the fabrication and shipbuilding companies provided transportation for their employees.

Vehicular traffic is a major contributor to high ozone levels. Thus, a major concern for the region's residents and potential economic development is its status as an Environmental Protection Agency (EPA) non-attainment area for the ozone (TCEQ n.d.). The EPA gave the region this status in the 1980s for exceeding the standard four times or more in a three-year period. Since then, the region has exceeded the one-hour standard on numerous days each year. Because non-attainment status places restrictions on development, community and industrial development leaders are trying to address existing problems and prevent additional ones.

6.4.3. Recent Developments at the Ports

In 2010, construction of a Transmodal Marine Yard was underway at the Port of Orange to allow the transport of intermodal freight, utilizing unitized modular containers and multiple modes of transportation, such as rail, truck, barge, and ship. The goal of the new project is to "position the Port of Orange to participate in 'Container-On-Barge' shipments of cargo; thereby, promoting economic development and creating jobs by providing economically viable shipping of products produced in petrochemical / manufacturing facilities in Southeast Texas and Southwest Louisiana" (Port of Orange n.d.). The major development at the Port of Port Arthur was the ongoing expansion of the new port road (Texas Department of Transportation 2010).

6.4.4. Economic and Industrial Development

As noted above, the Golden Triangle experienced outmigration and high unemployment following the 1980s downturn in regional economic activity. This sparked various efforts to reinvigorate and redefine the region. A vast array of entities in the Golden Triangle promotes economic and industrial development. Sabine River Authority of Texas, the Port of Beaumont, the Port of Port Arthur, the Southeast Texas Regional Planning Commission, the Southeast Texas Economic Development Foundation, the Nederland Economic Development Corporation, the Port Arthur Economic Development Corporation, the Beaumont Chamber of Commerce, the Groves Chamber of Commerce, the Nederland Chamber of Commerce, the Port Arthur Chamber of Commerce, and the Port Neches Chamber of Commerce**.** Several attempts have been made to coordinate economic development efforts. For example**,** the Southeast Texas Economic Development Foundation, an economic development organization for Jefferson, Orange and Hardin counties, aims to showcase the region's attributes in a comprehensive, unified fashion (SETEDF n.d.). The Partnership of Southeast Texas, a nonprofit economic development corporation, was established to plan cooperative regional efforts to help retain and create jobs in a nine-county area, including Chambers, Hardin, Jasper, Jefferson, Liberty, Newton, Orange, and Tyler counties, as well as the Bolivar Peninsula in Galveston County. The corporation was funded primarily by the local businesses, but also received significant contributions from city and county governments as well; it shut its doors around 2007 (Partnership of Southeast Texas n.d.).

Despite diversification efforts and an increase in service-sector employment, the region remains dominated by the petroleum and petrochemical industries, a situation that makes additional industrial diversification difficult. Local economic development strategies include the use of tax abatements. The terms of each abatement are established according to the percentage of local workers hired by the company receiving the abatement. Local industrial development leaders have expressed concerns that, due to worker shortages, companies would not meet the

terms of their abatements because they cannot find local workers. The recent economic slowdown highlighted another potential problem: scaling back refinery expansions has decreased projected tax revenues, despite the discounts that tax abatements would have provided (Collins and Hayes 2009).

Several economic development leaders also noted that local communities increasingly pay attention to "quality of life" issues, rather than simply whether companies that will create large numbers of jobs can be attracted to the region. The Golden Triangle has already drawn EPA attention for poor environmental quality, largely associated with the refineries, and air quality is an ongoing concern that can affect the future direction of economic development.

6.5. INFLUENCE OF THE INDUSTRY ON THE POPULATION OF THE REGION

The shipbuilding and fabrication industry's influence on the Golden Triangle's population is less immediately obvious than that on the physical features of the region. Nevertheless, qualitative and quantitative data allowed the research team to discern the industry's influence on people and communities. Between 1970 and 2006, the percentage of workers employed in private industry (87%) compared to government jobs (13%) stayed approximately the same (see Appendix I, pp. 33-36). The manufacturing sector accounted for almost 32% of the total private employment in 1970, but dropped to 12% by 2006. Likewise, the service and retail sectors accounted for 28% and 18% of total private employment, respectively, in 1970, but 37% and 15% in 2006. Construction has remained fourth, accounting for 8% of the total private employment in 1970 and 11% in 2006.

On the surface the headcount in manufacturing has remained unchanged over the last 30 years. However, the headcount has been fairly volatile during certain decades, and manufacturing now accounts for much smaller percentages of total employment and total private employment. At the same time, companies have argued that they struggle to find workers; they hire core and contingent workers and have utilized guestworkers on H-2B visas. The following sections summarize trends in employment and wages within the region.

6.5.1. General Population Dynamics

The population of Orange County increased 16% between 1970 and 2007, while Jefferson County's declined 1.8% (see Figures 6.8 and 6.9 and Appendix I, pp. 1 - 3). The decreases in Jefferson County result from a migration deficit (more people exiting than entering) coupled with declining birth rates; population increases in Orange County are the result of an increase in international and domestic migration, despite declining birth rates.

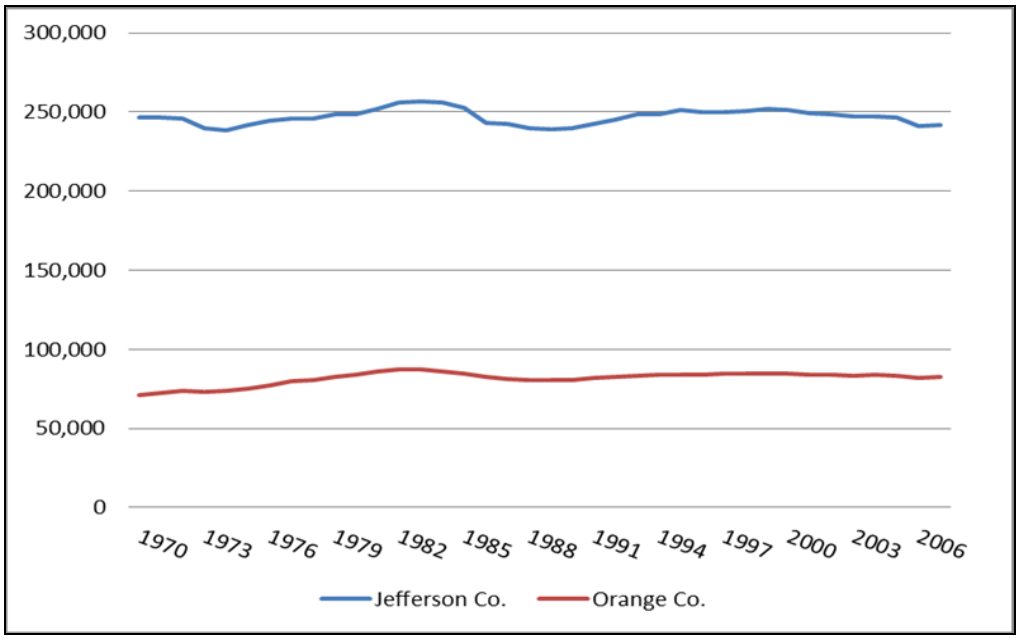

Figure 6.8. Population changes in Jefferson and Orange County from 1970 to 2007.

Source: U.S. Census Bureau, Population Estimates, County.

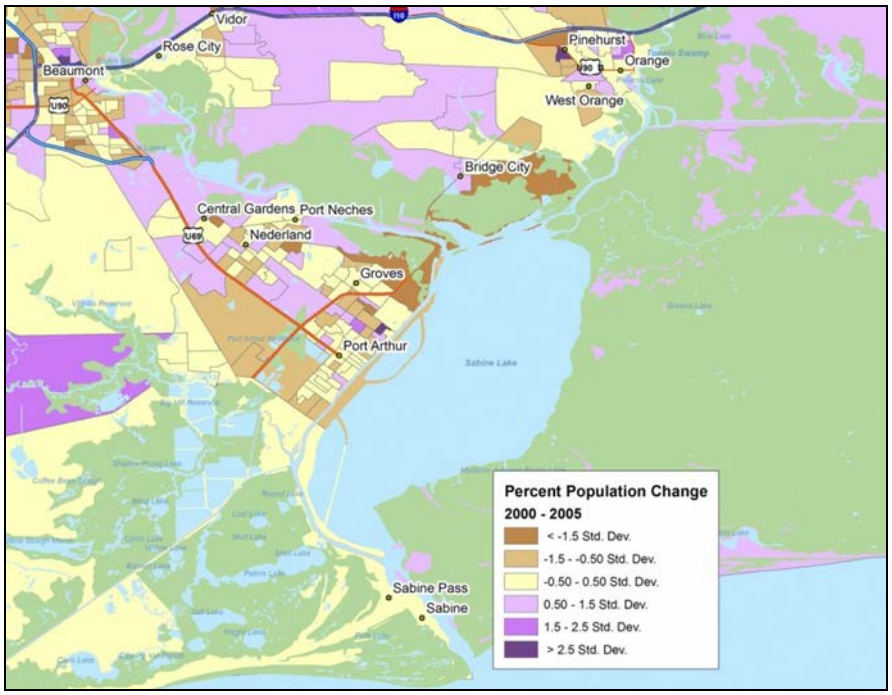

Figure 6.9. Percent population change in Golden Triangle-Census 2000 to Census 2005.

Source: U.S. Census Bureau 2000 Summary File 1; U.S. Census Bureau 2005 Summary File 1.

In 1970, Jefferson's population was 246,402, as compared with Orange County's population of 71,170. Jefferson began the 1970s with minor declines and ended with minor increases for a decade growth rate of 0.9%. Its population peaked in 1983 at 256,959, and it experienced population loss during the decade's remaining years, 1986 being particularly catastrophic. The county rebounded in the 1990s, growing 5.0%. However, it lost population every year from 2000 to 2006, for an overall decrease of 3.8%. Population trends in Orange County generally mirror those in Jefferson County, as shown in the figure. Population declined in these counties during 1984-1989 and 2000-2004 corresponded with large declines in manufacturing employment.

From 2000 to 2008, populations in all three of the region's principal cities declined: Beaumont lost 3%, Port Arthur lost 3%, and the City of Orange lost 6%. All three cities also lost population between 1980 and 2000, but their suburbs (most of them unincorporated areas) gained population during this period. Net domestic migration data indicates that, for 1990-2007, more people left than entered Jefferson County and Orange County.

The household composition of Jefferson and Orange counties is changing, with the number of married couples decreasing and the number of single parents increasing. In 1970, 88.6% of all households included married couples, but in 2005, that number decreased to 64.7% (see Appendix I, p. 14).

Despite the petroleum industry's wealth of, and the growth of various communities during decades of expansion and development for numerous industries, the Golden Triangle exhibits considerable social and economic inequality. Large areas with signs of great wealth (i.e., large refineries, suburban communities, commercial growth) stand in stark contrast next to economically depressed "urban" areas (e.g., central Port Arthur and, to a lesser extent, portions of Orange), where growth has stagnated, residential and commercial structures languish in various stages of disrepair, and there are many other signs that social, political, and community investment has shifted from the urban core to the suburban periphery. Commercial growth near the mall in Port Arthur exemplifies local decisions about investment versus reinvestment. Instead of developing central Port Arthur's largely empty commercial areas, entirely new commercial structures were erected along the highway between Beaumont and Port Arthur. Although conveniently located for access from the new suburban developments, these new structures did little to address the lack of commercial services in the urban core.

Substantial differences exist in the median incomes for Jefferson and Orange counties (see Appendix I, pp. 15 - 17). In 2007, the median income of Jefferson residents ($39,499) was lower than the median income for Orange residents ($46,563), which lagged slightly behind the median income for the State of Texas ($47,563). That same year, the median income for the Beaumont MSA was $50,336, but only $45,146 in the City of Beaumont. Port Arthur had the lowest median income of the Golden Triangle's three principle cities ($37,680). Turning to the region's economically disadvantaged residents, the number of people living below the poverty line in Jefferson County decreased 12.2% from 1989 to 2007, and the proportion of the county's people living below the poverty line also decreased from 18.4% to 17.1%. During the same period, the number of Orange County residents living below the poverty line increased 0.2% from 1989 to 2007, but the proportion of residents, 13.5%, remained unchanged at 13.5%. Historically, Port Arthur's poverty rate runs 10% higher than the county rate. There, an overall downward shift in income occurred. Between 1969 and 1999, the proportion of people in the Beaumont MSA with incomes in the lowest 20th percentile increased from 21% to 26.1%, the middle percentile decreased from 63.9% to 59.8%, and the upper 20th percentile decreased from 15.1% to 14.2%.

Port Arthur has the highest proportion of families with incomes in the lowest 20th percentile, whereas Beaumont has the lowest proportion.

6.5.2. Workforce Development and Trends

The dominance of the refineries and petrochemical plants can be seen in employment statistics for the Golden Triangle as well. Between 1990 and 2007, the working-age male population of Jefferson County grew 23.3%, from 57,055 to 70,339, peaking in 2001 at 70,769. Meanwhile, in Orange County that population grew from 16,869 to 21,845, peaking in 1983 at 22,824. With regard to the total populations of both counties, working-age males comprised larger proportions in 2007 (29.1% in Jefferson and 26.4% in Orange) than in 1970 (23.2% in Jefferson and 23.7% in Orange), and grew faster than the overall male populations. In both counties, following a peak in the early-1990s, unemployment has decreased, although it has fluctuated considerably (Figure 6.10).

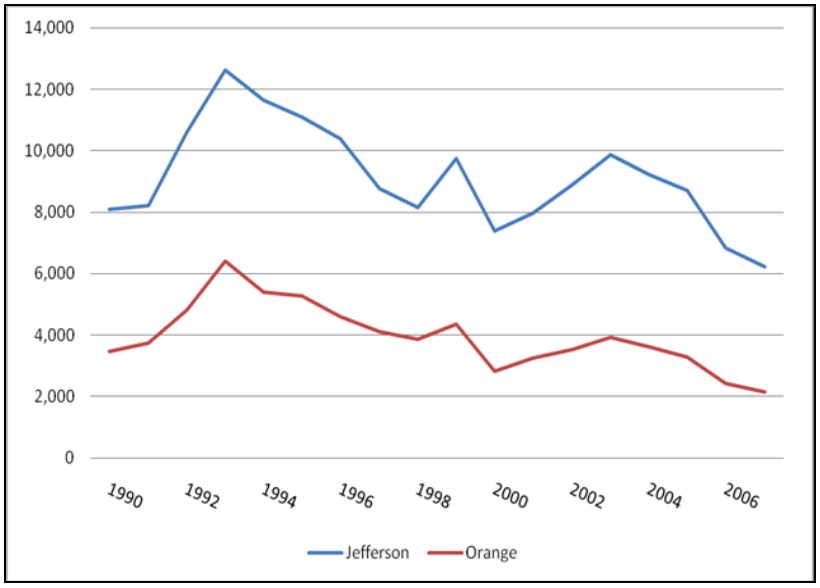

Figure 6.10. Total number unemployed in Jefferson and Orange Counties.

Source: U.S. Department of Labor, Bureau of Labor Statistics, Local Area Unemployment Statistics.

6.5.2.1. The Shipbuilding and Fabrication Workforce

Expansion and growth of the region's major industries have contributed to an increased demand for qualified workers (see Appendix I, pp. 33 - 35). A significant concern is that, despite increased demand, the region's unemployment rate has remained higher than the state's since the early-1990s. The Southeast Texas Workforce Consortium, a regional group of community and business leaders and workforce development allies, was established to find a solution for the Golden Triangle's high unemployment. Preliminary evidence suggested that deficiencies in basic employability skills (i.e., teamwork, responsibility, communication, problem-solving, information processing and adaptability) contribute to unemployment. Responding to this evidence, the Southeast Texas Workforce Consortium conducted a study to explore unemployment's causes in greater detail, so as to develop solutions that would ensure the

viability of the Southeast Texas labor market to meet present and future workforce demands. The problem has been perceived as pervasive across the region's labor markets and the consortium has argued that the solution will require cooperation, good data, and strong action plans (Lane 2003).

The fabrication and shipbuilding industry has been affected in particular ways by the mismatch between labor supply and demand. "Competition" between, on the one hand, industrial construction and maintenance work (including regular work at the refineries and chemical plants, as well as the booms in industrial construction associated with plant shutdowns and turnarounds) and, on the other, the fabrication and shipbuilding industry, has roots in an asymmetrical relationship. Regarding compensation, the pay and benefit packages are unequal, and in terms of sheer numbers, there are far more employees at the plants and refineries than in the fabrication and shipbuilding yards. Permanent plant and refinery jobs pay better, offer a better benefits package, and are typically more stable. Fabrication and shipbuilding work is perceived to be more subject to the fluctuations of the industry, while at the same time existing under harsher and more extreme environmental conditions. The perceived stability of plant work, including industrial construction and maintenance, belies an underlying reality that this work is often equally tenuous. Growth and expansion of the plants is followed by layoffs and slowdowns associated with either the completion of work, or cyclical demand for petroleum and petrochemical products (Collins 2009a).

As noted for this study's other communities, the major change in the Golden Triangle's economic profile has been the shift in employment opportunities from a traditional heavy manufacturing economy to a service-based economy. In fact, in the past several decades, the order of service employment and manufacturing employment have almost completely reversed positions as the largest employment sectors. This reversal may be a conditioning factor for observations on per capita income and average earnings. For the Golden Triangle, nominal wages have increased dramatically, but real wages have only increased slightly.[25] For other communities in this study, it has been observed that high-skill manufacturing jobs typically outpace inflation and thus lead to real wage increases. This has not been the case in the Triangle. Furthermore, it is relatively easy to offer observations about the local economy's overall condition and its industrial composition based on long-term trends. Yet, it is worthwhile to remember that changing situations during shorter timeframes do tell a compelling story—about boom-bust cycles that have exhibited extreme upswings as well as severe downturns.

During the period covered by this study, because of the small number of firms in this study area, fabrication and shipbuilding activity was only reported by the Bureau of Labor Statistics/Bureau of Economic Analysis (BLS/BEA) in detail for one decade: 1990 to 2000. During this period, the total number of firms[26] increased from an annual average of 13 to 25, with a high of 26 in 1999. Average employment increased from 1990 to 1998, before sharply declining for the decade's last two years. However, as noted in profiles of other study communities, the wages for workers still employed in fabrication and shipbuilding were relatively high and often had growth rates that outpaced inflation. These data compared

[25] Nominal wages are the wages paid in current dollars unadjusted for inflation, whereas real wages are wages measured in constant dollars adjusted for the effects of inflation. Inflation is typically defined as a rise in the general price level of a typical market basket of goods and services.

[26] Note that the BEA term, "annual average establishment count," refers to a firm. Because a firm could have multiple yards, this is not the same as number of yards. It is an annual average, meaning the actual number during any given year could have been higher depending upon the entrance or departure of firms during the year.

favorably to data on workers' wages in other industries. Increasing wage rates in fabrication and shipbuilding are especially significant given the general decline of manufacturing employment in the Golden Triangle during the study period. Nevertheless, throughout this period, declining employment accompanied increasing wage rates (nominal and real), and real wage growth lagged substantially behind nominal wage growth.

6.5.2.2. Alternatives for Skilled Workers

Local jobs are created by both the periodic expansion and routine maintenance of the petrochemical plants, all of which draw from the same skilled labor pool as the shipbuilding and fabrication industries. The labor pool includes skilled welders, pipefitters, boilermakers, steelworkers, safety personnel, and management, as well as semi-skilled/unskilled laborers involved in general maintenance and construction, janitorial and cleanup work, and other support or technical assistance positions in the plants and yards. In addition to the competitive overlap between refineries and shipyards, the lure of offshore work figures prominently in workers' decisions about available work, given local and regional opportunities for offshore-related work that often pays more than the onshore equivalent.

The sheer numbers of jobs in the petrochemical plants far overshadow those in fabrication and shipbuilding. For example, the new shipyard local leaders hoped to attract to Orange was expected to employ approximately 100 people, while the expansions and shutdowns at the local petrochemical plants were expected to offer employment to tens of thousands over the life of the projects, which could extend for months or even years. Consequently, in this area, the presence of the fabrication and shipbuilding industries are secondary to the refineries and plants, and changes or perturbations in oil and gas work and trends in that industry are felt much more strongly downstream (on refining and chemical processing) rather than upstream (on fabrication and shipbuilding and other support services).

In addition, as already noted, while the petrochemical and fabrication/shipbuilding industries draw from approximately the same pool of skilled workers, work in the refineries, the petrochemical plants, or the specialty fabrication yards is widely perceived to be better compensated in terms of both pay and benefits, and therefore prestige, as well as performed under better conditions than that in the fabrication and ship repair yards. In addition to the long term plant or "company" work that is available, at the time of fieldwork there were also countless other short term vocational opportunities as part of plant expansions, shut downs, and turnarounds. In addition, the new LNG facilities being built along the coast were also generating jobs in general industrial construction. At the time of this study, this work, even the short term semi-skilled/unskilled work that did not require specialized training, was paying better than the shipyards, and frequently included a food and housing allowance.

In addition to the aforementioned industries that are either directly associated with the shipbuilding and fabrication industries, or draw on a similar labor pool of welders, fitters, and industrial construction and maintenance workers, there are a number of other industries that employ large numbers of people in the region. These include the commercial fishing sector, which at one point occupied a more prominent place in the Port Arthur and Sabine Pass regions, but due to the high cost of diesel, the influx of imported seafood, and most recently, the impacts and damage of the 2005 and 2008 hurricanes now accounts for less than 2% of the local workforce. Workers have also been drawn to the thousands of jobs generated in residential and commercial construction, as companies and contractors have struggled to keep up with the post-hurricane recovery efforts and the rapid growth of the region over the past few years. The prison

industry in Jefferson County also attracts many people; relatively lower wages are offset by long-term job stability and state employee benefits. These job options do not require the same skill sets nor do they directly compete with fabrication and shipbuilding, but they do provide an alternative vocational option for those that lack the training, volition, or awareness to enter into the fabrication and shipbuilding industry.

As noted earlier, there is considerable overlap in the skills and training required for work in refineries and plants as well as in fabrication and shipbuilding, which means that a number of people who could be working in Golden Triangle shipyards and fabrication shops are instead employed by local refineries and petrochemical plants. Company manager carefully scrutinize the workplace behaviors of employees holding long-term career positions (e.g., absenteeism and insubordination), and screen employees for non-work activities, such as drug use. The short-term jobs are easier to obtain and often go through contracting agencies, study participants reported, and employees are less subject to scrutiny by company managers. Shipyard workers can and do sometimes take the short-term "boom" work to take advantage of increased wages and the potential advancement to a longer term position.

6.5.2.3. Finding Out About Work

Shipyards primarily find employees, according to company managers and workers, through social networks, whose main nodes are friendships, existing/former employee contacts, and word of mouth. Most managers said they find new workers by going through their rolls of former employees and contacting them to ask about interest in currently available work. The operational manager for a mid-sized company with a workforce of about 150 reported that in 2007 he had sent out over 350 W-2 forms (BM023 2008). Other companies reported a much more stable workforce in terms of numbers and longevity. Their managers associated workforce stability with maintaining relatively stable levels of work, which meant they did not necessarily expand and contract operations as work became available, but offered workers steady hours and employment to counterbalance the boom-bust cycles of available hours at some of the more cyclically-operated companies. Another important means for companies to find workers was to maintain a "walk-in list." It could be a sign-up sheet with the names and phone numbers of potential employees who agreed to be on call for available work, or simply a sheet identifying people who showed up at a yard intending either to take a skill test or start work as soon as possible.

The field team observed very few notices for work on yards in workforce centers, employment offices, in daily and weekly newspapers, or in classified ads. With the notable exception of one of the larger fabrication yards that put up a pair of large billboards advertising job openings and top pay rates, there was little or no public notification of employment opportunities at the various yards. This limited use of other ways to inform and recruit potential workers corroborates the fabrication and shipbuilding industry's emphasis on social networks and direct company contact in hiring practices.

6.5.2.4. Establishing and Maintaining a Workforce

There is another, perhaps more significant, outcome of the overlap/competition for labor among the Golden Triangle's manufacturing industries. Compared to refineries and petrochemical plants, fabrication yards and shipyards operate at the social and physical margins of communities, in terms of the workers they attract and the land they occupy. Thus, many study participants argued, fabrication and shipbuilding companies are forced to accept lower standards

for workplace behaviors/deficiencies, such as absenteeism and inadequate training, increased flexibility in terms of scheduling and rehiring workers who previously left jobs, and more variable policies concerning drug and alcohol use. Although fabrication and shipbuilding company workers cannot necessarily command the same wages as workers in plants or refineries, many expressed appreciation for the flexibility and openness that refinery/corporate jobs preclude, but work on the yards provides.

Many of the Golden Triangle's larger yards had functioning unions as recently as the early-1980s, and a major role for unions was to attract and train workers, and place them in jobs. At the time, unions representing pipefitters and boilermakers, along with electrical workers (International Brotherhood of Electrical Workers) and steelworkers (United Steel Workers), had an especially strong presence in the shipyards. With the global oil market's downturn, however, a number of local yards closed or were reorganized, and the unions were held at least partially responsible for the collapse. Even some of the union workers employed in these yards before their collapse expressed this sentiment (BM026 2008; BM043 2008). When closed yards reorganized as non-union "merit shops," many union workers either switched to work for local companies in other manufacturing industries with union connections, or they relocated (temporarily or permanently) to continue union work that commanded union wages and contributed to pension plans. Local work did not make retirement contributions and often did not pay as much as regional or national union work (BM042 2008; BM045 2008).

Training, as just noted, was an important activity for the unions before the 1980s. Much of the work in the fabrication and shipbuilding industry involves highly-skilled or semi-skilled trades, and even those tasks that do not require training in specific skills often require workers to become familiar on the job with a yard's layout and tasks. Union training programs typically last four to five years, and mix classroom instruction with hands-on training. Trainees can often complete a program while working within the industry. Although non-union merit shops and non-union jobs have decreased the power and influence of the Golden Triangle's unions, some union training programs still functioned at the end of fieldwork for this study, and the skill levels that they offer union workers remain prized.

On-the-job training (OJT) is another important way for the fabrication and shipbuilding industry's employees to acquire necessary skills. The Texas Workforce Commission (TWC) has a special division for worker training, development, and placement. Unfortunately, the TWC training program is limited in length and scope, and there is some degree of dissatisfaction among all involved parties—program organizers, trainers, trainees, and employers (BM004 2008; BM009 2008; BM015 2008; BM025 2008). Viewed from the employer's perspective, the training programs are unable to provide anywhere near the number of workers companies need, workers placed in jobs often have elevated expectations about their worth and the wages they should command, and the training programs are often too short to teach more than rudimentary aspects of welding or fitting. Consequently, placed workers are sometimes unable to perform the most basic of skilled work. On the employee side, trainees express concern that they do rigorous skilled work during training, but are asked to perform basic janitorial or maintenance tasks given their lack of other skills. The training program organizers noted that they must emphasize general skills, such as arriving on time, following directions, and responding to authority, rather than only specific occupational skills, because many of the trade skills that trainees can learn onsite require weeks or months of practice. By contrast, the organizers added, lack of requisite workplace socialization meant that employees often did not last on the job long enough to acquire trade skills (see Chapters 4 and 5, Volume III).

The public and private sectors also offer longer and more comprehensive training programs. Typically lasting for one to two years, the programs are much longer than the TWC's basic introductory programs, but they do not require the time and political commitment of union programs. One noteworthy drawback of public or private sector training programs is that they tend to funnel trainees toward long-term jobs as process technicians, industrial engineers, or industrial construction workers in refineries and chemical plants, which limits their utility to local fabrication and shipbuilding yards.

Despite the various training programs and other mechanisms for attracting employees, leaders in the Golden Triangle's fabrication and shipbuilding industry argued that they were unable to attract sufficient workers after the 2005 hurricanes. Consequently, several yards attempted recruiting guestworkers through the H-2B visa program (see Section 6.5.4.4. below).

The number of high school graduates in the Golden Triangle study area increased 81.5% from 45.5% of the population in 1970 to an estimated 82.6% in 2007. The number of people with college degrees or more increased 84.9% from 8.6% of the population in 1970 to an estimated 15.9% in 2007. These averages lag state and national averages. The proportions of people holding a high school diploma, a bachelor's degree, or additional educational credentials in the City of Beaumont exceed the average for the Beaumont-Port Arthur MSA, but Port Arthur significantly trails MSA, state and national averages.

6.5.4.4. Temporary Workers

Many international immigrants have arrived in the Golden Triangle during in the past three decades without official documentation, and some have been employed in fabrication and shipyards. It is impossible to determine the number of undocumented immigrants. However, study participants and local observers commonly asserted that a portion of the workforce was in the U.S. illegally, adding that the industry would not be able to sustain itself without undocumented workers. Not all companies used undocumented labor, and those that did may have been unaware of their employees' immigration statuses. However, companies hired undocumented workers during the fieldwork period, as an ICE raid at a local shipyard in July of 2008 clearly revealed (Meaux 2008).

After 2006, local employers brought a significant number of foreign workers to the region on temporary H-2B visas (see Table 6.3 and also Chapter 2, Volume III). Table 6.4 shows the number of H-2B visas that were certified to companies in the Golden Triangle region requesting workers specializing in welding and other fabrication-related jobs and operating between 2000 and 2010. The number of requests was significantly higher than certifications, as indicated by the number of denials. The earliest H-2B certification of fabrication workers during this period occurred in 2003, but the rapid increase in requests by area fabricators after 2005 is striking, reflecting the overall worker shortages in the industry after the 2005 hurricanes and the increasingly widespread practice of seeking H-2B workers. Conforming to regional trends, the number of Golden Triangle requests and certifications fell precipitously after 2008 (see Chapter 2, Volume III).

Table 6.3.

H-2B Visa Certifications/Requests for the Golden Triangle, 2000-2010*

Year	Construction	Fabrication	Fishing	Hospitality	Other
1999	0/0	0/0	0/0	0/0	0/0
2000	0/0	0/0	0/0	0/0	0/0
2001	13/13	0/0	44/44	0/0	0/0
2002	12/12	0/0	3/3	0/0	35/35
2003	54/54	15/15	0/0	0/0	40/40
2004	326/326	0/0	6/6	0/0	72/72
2005	49/49	0/0	36/36	0/0	50/50
2006	50/50	802/1215	0/0	0/0	80/40
2007	159/459	635/810	0/0	0/0	72/225
2008	20/20	321/988	33/35	0/0	90/92
2009	29/30	0/149	0/0	0/0	0/206
2010	16/16	0/0	0/0	0/0	46/46

*Includes Beaumont, Buna, Orange, Port Arthur
Source: US Department of Labor 2011
Note: Construction includes construction worker; fabrication includes all types of welders, pipe fitters, metal fabricators (see Table 6.4 below); fishing includes fisher, shellfish shucker, deckhand fishing vessel, and such; hospitality industry, for restaurants and hotels, includes kitchen helper, food assembler, housekeeper, and such); timber includes forest workers, tree planters, and such; and other includes everything else.

Table 6.4.

H-2B Visas Certified in Welding and Fabrication-Related Jobs in the Golden Triangle

Year	City	Job Type	Number Certified	Number Denied
2003	Beaumont	Welder Helper	15	0
2006	Beaumont	Fitter	0	113
2006	Beaumont	Welder Helper	120	0
2006	Beaumont	Arc Welder	179	0
2006	Buna	Fitter Helper	153	0
2006	Orange	Fitter	0	171
2006	Orange	Pipe Fitter	150	0
2006	Orange	Welder Fitter	0	129
2006	Port Arthur	Production Line Welder	200	0
2007	Beaumont	Welder Fitter	187	21
2007	Buna	Fitter	153	0
2007	Buna	Welder Fitter	0	149
2007	Orange	Welder Fitter	295	5
2008	Beaumont	Pipe Fitter	0	115
2008	Beaumont	Welder Helper	19	127
2008	Beaumont	Arc Welder	0	125
2008	Buna	Fitter	153	0
2008	Buna	Welder Fitter	149	0
2008	Orange	Welder Fitter	0	171
2008	Orange	Arc Welder	0	129
2009	Port Arthur	Welder Fitter	0	149

Source: US Department of Labor 2011.

Fearing the negative consequences of poorly managed recruitment and workplace practices, in September 2006, the Orange city manager took the proactive step of writing a memorandum summarizing events and policy issues related to a request before the City Council from Signal International Orange. The shipbuilding company had requested approval of a plan to establish a housing facility on its property to house 300 Indian national guest workers, coming from India and the United Arab Emirates, under the H-2B Visa Program (Oubre 2006; see Appendix D). The city had already approved onsite housing for another shipbuilder, but the relevant memorandum "did not suggest these requirements because the City felt that it was an isolated incident due to lack of housing" (SD09 2007). Signal International's request alerted the city manager and other local leaders that the initial request was not an isolated one. The memorandum continued, "As the City continues to get these requests, Council may want to use the above requirements as the minimum requirements as staff feels there may be more requests in the future . . . . The Golden Triangle area is experiencing economic growth that it has not experienced in this area in a long time. In order to address this growth, Council is being asked to approve something it would not consider during normal economic activity" (Oubre 2006). In addition to concerns about the conditions of onsite housing, city leaders were wary about

allowing companies to house workers on their yards rather than within the community would negatively affect tax revenues and therefore the local school districts and the community relying on those revenues (BM039 2008).

The memorandum explained the H-2B Visa Program, the arrangements Signal International had made for the workers, and the steps taken by city staff to review the proposal. The memorandum also included information about the number of workers, their country of origin, Signal International's application, the types of workers being sought, the wages to be paid, the cost of housing and per diem, medical insurance to be provided to the workers, and the steps Signal International had taken to advertise for local workers (i.e., communications with Pipefitters Local 195 as well as ads in three local papers and the *Houston Chronicle*). It also addressed potential concerns about the safety of personnel and emergency workers responding to calls at the site, entertainment, the provision of translators for non-English speaking workers when they were off the property, and access to the site. According to the memorandum, "The Fire Department, Public Works, Police Department, and Code Enforcement have reviewed documents as well as toured the proposed site to evaluate the request. Signal has responded to all inquiries. Many of the requests were for safety of personnel as well as emergency workers responding to calls. The Signal International Orange facility is located in an industrial zone. The current ordinance does not allow for permanent housing within an Industrial Zone. The ordinance does not address temporary housing. Staff recommends Council approve temporary housing on site and review the status of the housing in eighteen (18) months. Upon completion of the eighteen (18) months or an extension, Signal must cease operating and remove the housing" (Oubre 2006).

The Indian workers began arriving in Orange in November 2006. In 2007, a group of the Indian workers at Signal's Pascagoula, Mississippi facility walked off the yard. By 2008, Signal transferred all the H-2B workers to its Pascagoula yard, leading a city official in Orange, Texas to note in March that the community had "finished that phase" (BM039 2008). That same month, with the help of New Orleans Workers' Center for Racial Justice, a group of more than 100 workers filed a class action complaint (Kurian et al. v. Signal International, LLC et al.) that Signal defrauded and exploited more than 500 Indian workers in its Pascagoula and Orange, Texas yards (Crocker 2008). Despite the city's precautions regarding housing, the workers' complaints included concerns about conditions at the Orange yard. Though the lawsuit was still pending against the company, in 2012 a U.S. federal judge denied the workers class certification in the case (see Austin n.d.).

6.5.3. Impact of the Hurricanes (2005 and 2008)

The storm season of 2005 affected the area when Hurricane Rita hit the southeast Texas Gulf Coast. Reporting in the popular press and the subsequent deluge of media images after Hurricane Katrina and Hurricane Rita elevated local awareness of the potential impact of storms, the need to prepare for such natural events, and the planning and logistics work required for preparedness and recovery efforts. Numerous homes and businesses were destroyed in Sabine Pass, Texas and Cameron, Louisiana to the east, and these two communities bore the brunt of Rita's adverse effects on the region. The rest of the Golden Triangle was affected less severely than the coastal communities, due to a combination of factors—the geographic serendipity of the storm track and the existing levee/flood control system—rather than the region's preparedness or response capacity (BM037 2008).

The year 2008 featured the relatively minor impacts of Hurricane Gustav (compared to Rita), but Hurricane Ike was devastating, particularly for Sabine Pass and Bridge City, both of which were still struggling to recover as of January 2009, even with regard to basic services and amenities. Ike was quite large, and the specifics of local geography coupled with the hurricane's point of impact (west of Port Arthur), and directional orientation (moving northeast), caused a significant water effect. The storm funneled water up the Sabine-Neches Waterway, and both rivers flooded Orange and Bridge City (inland communities that lack levee protection) and ransacked Sabine Pass, which sits directly on the Gulf Coast.

While the 2005 hurricanes brought additional business to the Golden Triangle's fabrication and repair yards, the 2008 hurricanes had no such "positive" effect and they actually drove at least one yard out of business (see also Chapter 7, Volume III). In the absence of major damage to offshore structures in the Gulf of Mexico and in the midst of a national economic recession, the local costs of storm damage were not offset by significant increases in local business activity or federal emergency funding. Local yards faced financial challenges as well as logistical difficulties due to damaged facilities and interrupted service from suppliers and vendors. Moreover, the hurricanes caused social and community disruptions, which destabilized the local workforce. Workers, who are also family members, homeowners, and neighbors, were busy returning from evacuations, dealing with the hurricanes' effects on their homes, or wrangling over bureaucratic formalities with local, state, and federal government officials (Peveto 2008b; MSNBC 2008).

6.6. DISCUSSION

The Golden Triangle, and particularly Orange and Port Arthur, supports a diversified fabrication and shipbuilding industry which supports not only the offshore petroleum industry but also produces inland and military vessels, as well as fabricating pipe and pressure vessels for oil or gas refineries. There is strong local, regional, and even national social and political support for refinery expansion and expansion of the petrochemical industry in general, as their presence is for the most part seen in an uncritical light. Support for expansion is couched in terms of national security and national capacity for energy independence. During fieldwork for this study, a story circulated about President George W. Bush's post-Rita visit to the Golden Triangle, stating that his only question was, "How soon will the refineries be back online?" Regardless of the story's veracity, it dramatizes what leaders and residents of local communities already knew: above all else, the region's refining capacity is of national importance. Viewed from the perspective of national and global political-economic dynamics, where powerful actors place a premium on the petrochemical industry's needs, owners, managers, and workers in a regional or local fabrication and shipbuilding industry are small players. In addition to being out-competed for their skilled workforce, fabricators and shipbuilders lack the social and political capital, and therefore the influence, that the petrochemical industry possesses.

As of January 2009, many of the Golden Triangle's larger fabrication and shipbuilding companies had scaled back or completely halted operations, even if only temporarily—an outcome of declining workloads as well as the storms of 2008. Meanwhile, however, some of the smaller specialty fabrication and repair yards were doing well. Currently available data are insufficient to suggest anything other than a series of correlations. Yet, local companies that had maintained a steady sized workforce and tried to keep a consistent workload appear to have fared better than the more opportunistic companies that expanded and contracted as the work and available workforce dictated. In addition, those companies that had carved out a particular niche

in local or regional marketplaces also appeared to have fared better than the companies that took any available work or contract on which they could successfully bid.

The analytical results for the model for the Golden Triangle showed no detectable long-run statistical relationship between oil or natural gas prices and major economic variables, such as manufacturing employment. Furthermore, no such relationship was detected between major economic variables, such as employment in manufacturing or personal income, and the personal current transfer variables for the study area's communities. However, there was some statistical evidence that supported a simple lag relationship between a change in employment in the manufacturing industry and the level of the unemployment transfers. While this appears to be a common-sense conclusion, the proportional changes seem to suggest that fabrication and shipbuilding, and manufacturing more generally, remains a major component of the income generated in United States. The lag relationship also appears to be contemporaneous, with no long-term hold over. This may be a function of the boom-bust cycles that characterize the manufacturing industry in Golden Triangle communities.

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7. CORPUS CHRISTI-INGLESIDE

7.1. INTRODUCTION

The Coastal Bend, generally understood to be the 12-county region centered on the small city of Corpus Christi, constitutes Texas' mid-coastal region. At the center of the region are the two counties abutting Corpus Christi Bay: San Patricio on the north and east shore of the bay, and Nueces on the west and south (Figure 7.1). The region has been involved in the petroleum industry for more than a century, beginning with drilling in the inland counties, and then moving to commitment to refining and the construction of offshore structures and the provision of related services. Nueces, San Patricio and Aransas counties make up the Corpus Christi Metropolitan Statistical Area (Corpus Christi MSA) and are the principal shipbuilding and fabrication areas.

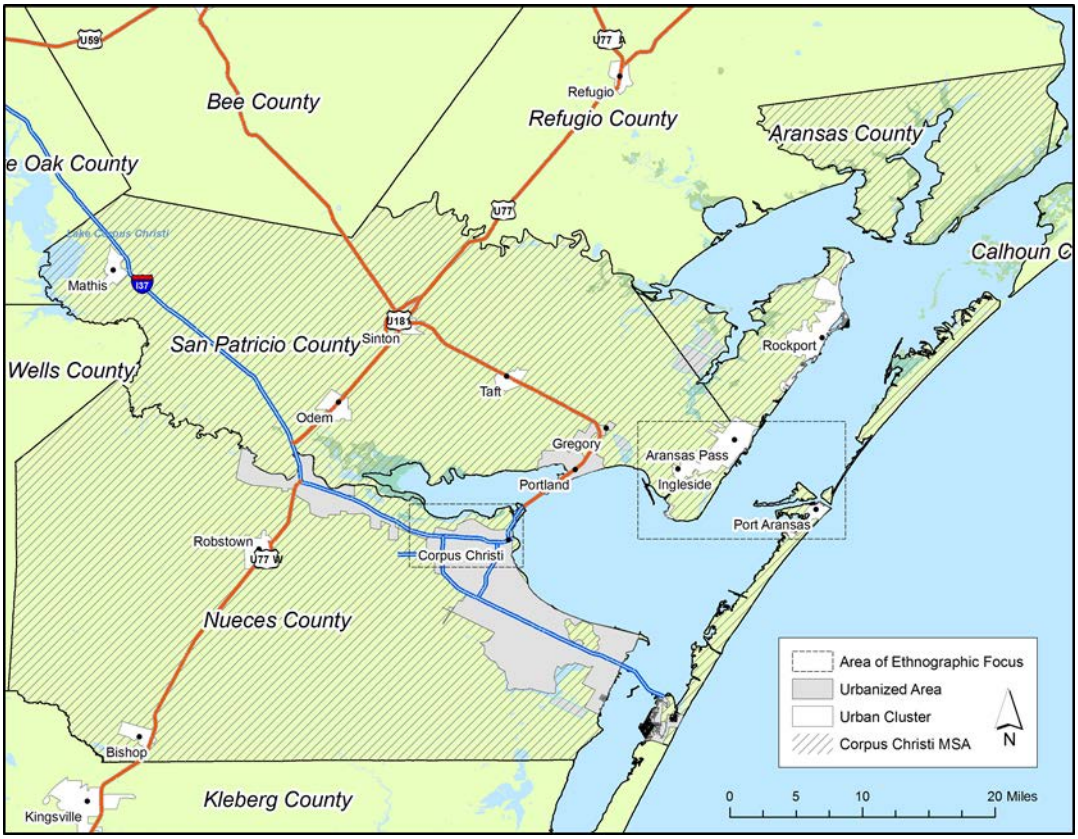

Figure 7.1. The Coastal Bend.

Map was created in 2011 using data packages included with the ArcGIS software suite. Sources used to create these data layers included: ArcWorld/ESRI, National Atlas of the United States, Tele Atlas, U.S. Bureau of Transportation Statistics, U.S. Census, and U.S. Geological Survey.

The City of Corpus Christi is the seat of Nueces Country. Port Aransas, Mustang Island, and part of the adjacent Harbor Island lie on the northeast side of the bay, but are under the jurisdiction of Nueces Country. Ingleside and Aransas Pass are the primary industrial towns in otherwise largely agricultural San Patricio County. Rockport, the county seat of Aransas County,

played an important role in the region's early shipbuilding history. By the 21st century, offshore fabrication activity was greatest in Ingleside and Aransas Pass.

7.1.1. General Description

The Coastal Bend is the gateway to South Texas and lies about three hours from the international border with Mexico. San Patricio County was established in 1836 by the Congress of the Republic of Texas and originally included land later demarcated to form Nueces County. Before 1836, the Mexican government granted land in the area to "empresarios," such as John McMullen and James McGloin who managed to attract Irish Catholic families from New York City to settle there. Ongoing conflict between Mexican and independent Texas forces kept the region destabilized until Texas was annexed to the United States in 1845 and federal forces under General Zachary Taylor were dispatched to the region. Taylor's task, along with the army of General Winfield Scott, was to enforce the U.S. claim that the new international boundary was the Rio Grande, not the Nueces River. The region between the Nueces River watershed and the Mexican border remains distinct, and areas south of Corpus Christi retain strong ties to Mexico (see Chapter 8 of this report).

Interior sections of Nueces, San Patricio, and Aransas counties are largely agricultural. The coastal regions of these counties, despite having a history of ranching, are markedly different. They are defined by the water. Although the Texas shrimping industry's decline began in the 1980s and the region's shrimp fleet has shrunk considerably since then, Aransas Pass residents continue to identify themselves with shrimping. The county's annual Shrimporee began in 1948 and is billed as the largest shrimp festival in Texas. Today, however, the community promotes tourism and recreational fishing. Residents tout Conn Brown Harbor, once home to more than 300 shrimp boats, as a prime spot for recreational fishing. Port Aransas, located southeast and across Redfish Bay, has completed the transition from ranching and fishing to become a "premier vacation destination" (Port Aransas Chamber of Commerce 2011, Schafer 2009).

Conversely, Ingleside proudly highlights its marine industry. Service firms, labor contractors, and fabrication yards line the city's main roads. As a city elected official (RC009 2008) noted, "We are an industry community." Driving from Corpus Christi's industrial center, along Leopard Street, which is dominated by refineries, and along the city center to the Corpus Christi Bay Bridge, one cannot miss the industrial focus of both Ingleside and Aransas Pass. The smokestacks of Sherwin Alumina and OxyChem dominate the skyline, but in Ingleside the large "lifting devices" of Kiewit Offshore Services and Gulf Marine Fabricators demand attention as well. Even so, Ingleside, too, is looking to diversify, attempting to create an affordable, family-friendly atmosphere attractive to residents seeking an escape from the "big city," and, simultaneously, to promote business development (Ingleside Chamber of Commerce 2011, City of Ingleside 2009).

7.1.2. Principal Ports and Key Infrastructure

The Port of Corpus Christi, completed in 1926, is the sixth largest port in the United States. The port was initially a key site for Mexican oil imports; oil interests played a significant role in securing federal funding for its expansion, and petroleum still represents the bulk of its shipments. Refineries and petrochemical plants dominate the area around the port and continue to generate its most significant revenues. Where once the port collected South Texas petroleum and shipped it to other regions, it now brings in mostly foreign oil for refining or use in the petrochemical industry, and sends petrochemical products out into the market. Port properties

stretch from the "Inner Harbor Port Related District," a channel running from the Corpus Christi Harbor Bridge westward to and past the Flint Hills Resources refinery, across the bay to Harbor Island between Aransas Pass and Port Aransas. In the fall of 2010, when Naval Station Ingleside was completely closed, the 912 acres of property acquired for that facility reverted back to the port.

North of the port is the Rincon Industrial Park, a 458-acre facility developed in the 1960s on the south shore of Nueces Bay. Rincon was designed for shallow-draft commerce and was home to fabricators during periods of peak activity, but most of its lots were unoccupied when the research team conducted fieldwork (The Port of Corpus Christi 2009a).

The Intracoastal Waterway runs along the coast, passing Aransas Pass and Ingleside Point and continuing on through the Corpus Christi Bay. The Corpus Christi Ship Channel influences where industry is located and will locate in the future. In 2007, Congress authorized the Corpus Christi Ship Channel Project, which includes both navigation and ecosystem restoration features, such as extending, widening, and deepening the La Quinta Ship Channel (see Figure 7.2). With federal and port funding, the project is scheduled to be completed and the channel extension ready for use by 2014 (The Port of Corpus Christi 2009b, Smith 2011). Although the property along La Quinta Channel was originally envisioned as the site for a single-purpose container terminal, by mid-2011, the property was slated to become a multi-purpose dock and terminal (Cardenas 2010). The following section describes the historical context within which the shipbuilding and fabrication industries in the central Coastal Bend developed.

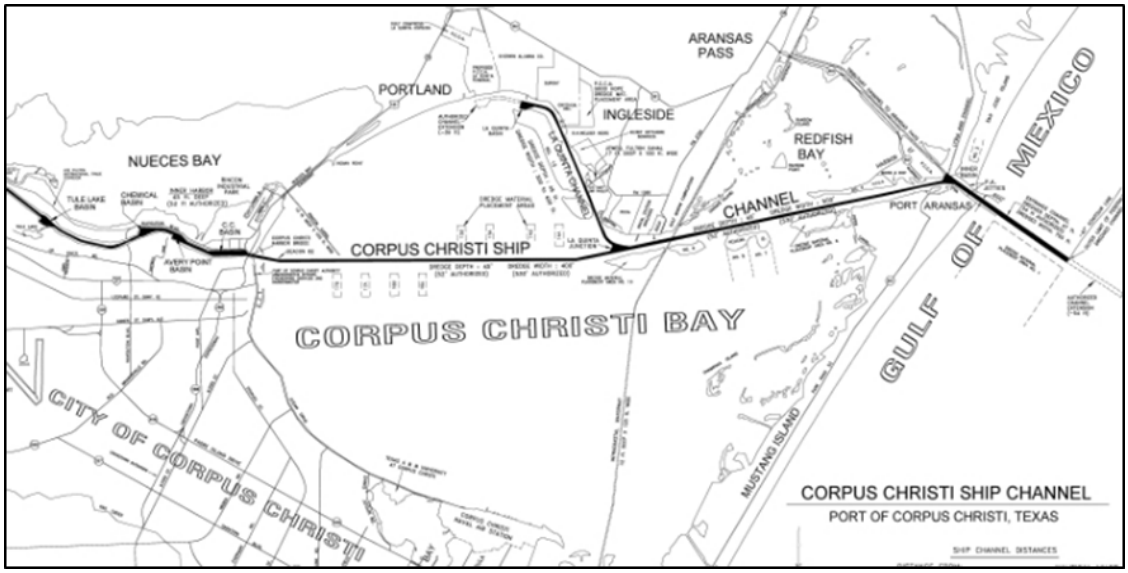

Figure 7.2. Corpus Christi Ship Channel and La Quinta Extension.

Source: The Port of Corpus Christi 2009c

7.1.3. Current Industrial Profile

Using the characterization of yards based on company ownership that was developed for this study and described in Chapter 1 of this volume, yards in the Coastal Bend are representative of three of the four types (Figure 7.3): yards that service or fabricate only rigs and platforms, yards that service or fabricate only vessels, and small specialty shops. The on-land requirements of these yards include parking areas capable of handling large crews and their vehicles, as well as

covered and uncovered work areas, and large storage areas for components and other structural steel that will eventually be placed on a rig or platform or hauled away for scrap.

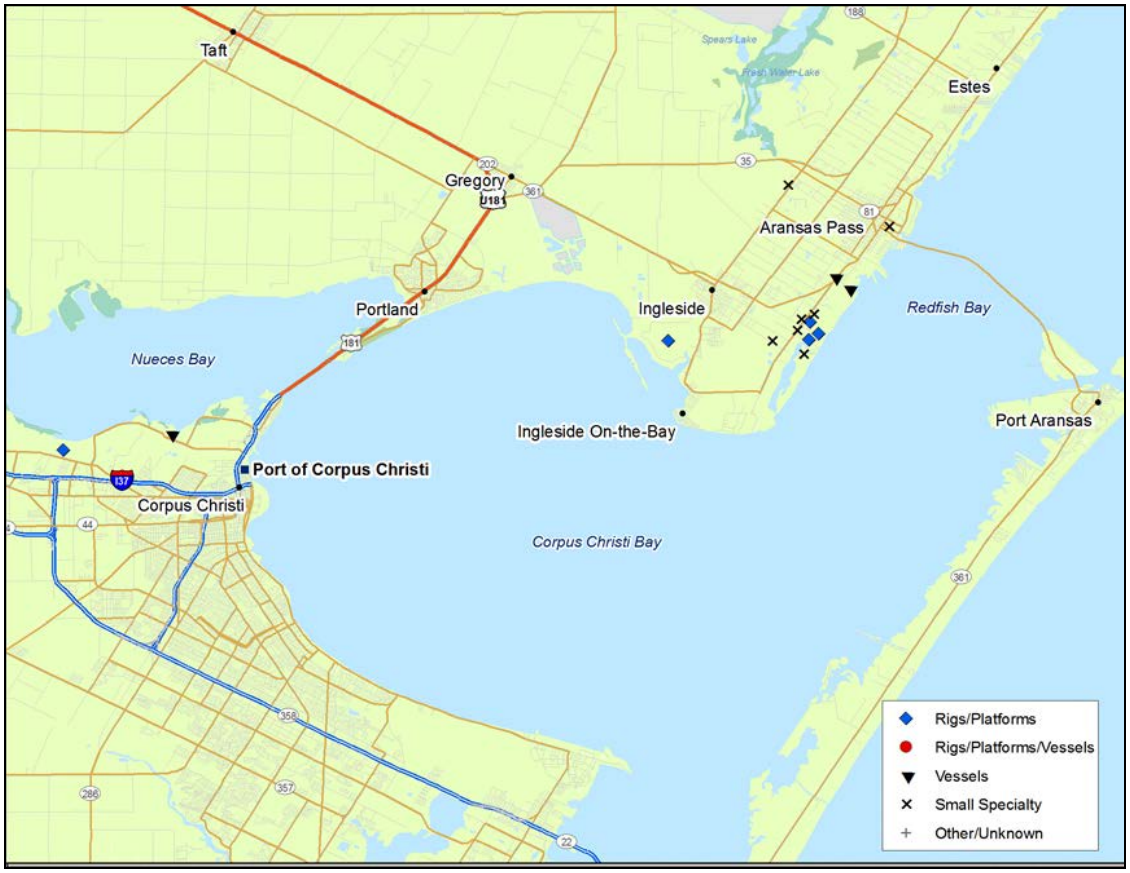

Figure 7.3. Fabrication and shipyards in the Coastal Bend study area.

Map was created in 2011 using data packages included with the ArcGIS software suite. Sources used to create these data layers included: ArcWorld/ESRI, National Atlas of the United States, Tele Atlas, U.S. Bureau of Transportation Statistics, U.S. Census, and U.S. Geological Survey. Additional shipyard data assembled by Rebecca Crosthwait, 2008-2010, from multiple sources, primarily company websites, business directories, and ethnographic data collection.

7.2. HISTORY

The central Coastal Bend has been producing vessels since before World War II. However, production, in terms of numbers of vessels, has never been high, and it has fluctuated significantly over the years (see Figure 7.4). Beginning in the 1970s, offshore fabricators established major yards at Harbor Island and Ingleside for the construction and assembly of drilling rigs and massive platforms. Activity declined after the downturn of the 1980s, but both large and small fabricators maintain facilities in the region to produce vessels and platforms for the deepwater market, and some still engage in rig repair.

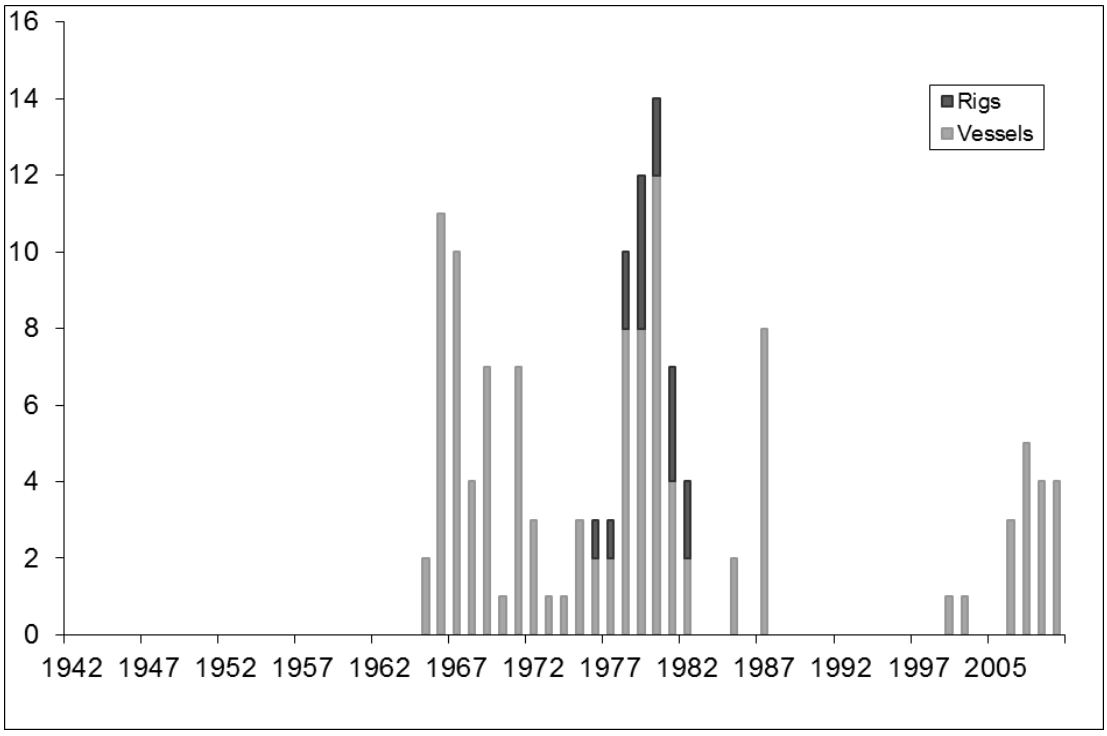

Figure 7.4. Number of rigs and vessels produced at yards in the central Coastal Bend (Corpus Christi Ship, Ingleside, and Rockport), 1940-2010.

Source: Colton n.d. Note: Rig data are incomplete.

7.2.1. Maritime and Shipbuilding History to 1945

With several natural outlets to the sea, the Coastal Bend region appears to be ideal for shipbuilding and oil industry fabrication. Until World War II, however, construction there was limited to small watercraft. During the late-19th century, the cities of Corpus Christi and Rockport competed for shipborne cargo traffic to the western part of the Gulf of Mexico. Harbors along the Texas coast, which slopes gradually toward the continental shelf, were shallow and continuously filled with sediment from coastal wave movement and river runoff. As a result, they could not accommodate large ships, thus confining shipbuilding to fishing and inland workboats.

To attract maritime commerce, business and political elites lobbied for federal money to develop a deepwater port for the region. In the early-1900s, the federal government appropriated funds to dredge a channel from Aransas Pass into Corpus Christi Bay and to construct a deep draft port at Harbor Island (Miller 1998). The devastating hurricane of 1919 destroyed the port, shifting commerce to Corpus Christi, where a larger deepwater port was completed in 1926. The Port of Corpus Christi became a publicly owned and operated harbor, with its main port at Corpus Christi and three outport divisions at La Quinta, Ingleside, and Harbor Island. Corpus Christi's port soon became one of the busiest harbors in the United States. The Corpus Christi Ship Channel, which connected the Inner Harbor and Harbor Island, was dredged to 25 feet and then to 30 feet by 1930 (The Port Commission of the Port of Corpus Christi 1976; Weil 1986).

Due to the loss of the deepwater port in 1919, commerce at Harbor Island dried up. The island would survive as an industrial center, though, because of oil and gas activity. Major discoveries were made throughout the region in the 1910s and 1920s, and some oil imports from

Mexico entered Texas through Harbor Island. Beginning in 1927, Humble (Exxon) Oil established a refinery in Ingleside, a shipping facility at Ingleside for the refinery's products, and a tank and dock facility on Harbor Island to handle exports of its crude. This proved to be only the beginning of the central Coastal Bend's development as a center for refining and petrochemical production (The Port Commission of the Port development of Corpus Christi 1935).

Once Corpus Christi got its deepwater harbor, the city began to develop in earnest. By 1930, Nueces County had become the top cotton-producing county in the United States. The former coastal village began to build skyscrapers and modern hotels, and its first large industrial plant opened. The population rose from 10,522 in 1920 to 27,741 in 1930, and doubled again in each of the following decades (Kilgore 1972). Beginning in the mid-1930s, the major portion of the tonnage moved through the Port of Corpus Christi shifted from cotton to petroleum and petroleum products as refineries sprouted up around the port (Weil 1986).

World War II gave Corpus Christi another development boost. In 1941, the U.S. Navy built a new Naval Air Station at Flour Bluff (The Port Commission of the Port of Corpus Christi 1985-1986). The project expanded into a $125-million naval air-training center and by 1944 it was the world's largest naval aviation training facility, covering 20,000 acres with 997 hangars, shops, barracks, warehouses, Naval Air Station Corpus Christi, Corpus Christi Army Depot (CCAD), and other buildings (Global Security 2009). To meet the huge demand for World War II vessels, the U.S. Maritime Commission contracted shipbuilders across the country to construct large vessels, and shipbuilders and repairers set up shop along the Gulf of Mexico. One of these companies, the Corpus Christi Shipbuilding Company, received a contract to produce a wooden tugboat, which it completed in 1945 (Colton n.d.).

7.2.2. Shipbuilding and Fabrication in the Postwar and Early Offshore Oil Era, 1950s-1980s

In the decades after the war, refineries and cargo vessel shipyards sprung up in Corpus Christi to supply other parts of the United States with petroleum from Texas. Immediately after the war, however, the companies struggled to keep their doors open. Humble closed its refinery in 1945 after a strike by the local union, an affiliate of the CIO. Humble's authorized historians attributed the closure to the post-war cancellation of a federal contract for the production of butadiene (Larson and Porter 1976). Other refineries and industrial facilities maintained their facilities and even grew. In 1951, for example, Reynolds entered into a cost-sharing agreement with the Port of Corpus Christi to dredge the La Quinta Channel from the north side of Corpus Christi Bay at La Quinta through the Ingleside Peninsula. The channel would meet the needs of the aluminum plant Reynolds was building near Gregory, and also those of other plant sites along the north shore of the bay, for access to a deepwater channel (The Port Commission of the Port of Corpus Christi 1952).

The Corpus Christi port continued making improvements to attract industry. The closing of the Suez Canal in 1967 spurred the building of supertankers, and Corpus officials contracted Ross Anglin & Son to construct a supertanker oil dock and complete Rincon Industrial Park in the late-1960s. Rincon, a 458-acre park located on the south shore of Nueces Bay, was designed for shallow-draft commerce, including barge operations, boat works, shrimp fleets, oil well servicing for offshore rigs, shell dredgers, and other light industries (The Port Commission of the Port of Corpus Christi 1976; The Port Commission of the Port of Corpus Christi 1968).

As described in Chapter 1, Volume I, the offshore industry's move into 1,000-foot water depths in the 1970s led to a search for larger yards to fabricate mammoth steel jacket platforms. In 1975, both Brown & Root and J. Ray McDermott purchased land on Harbor Island and developed fabrication yards that opened the next year to meet the demand for deepwater structures (Pratt, Priest, and Castaneda 1997).

Ingleside, on the northeast side of Corpus Christi Bay, fronting the Gulf, also became a major fabrication site for the offshore petroleum industry. Platforms, consisting of steel decks, jackets (the tubular steel uprights), and compartments for the equipment, machinery, and housing, consumed large amounts of steel, and mechanisms for acquiring and transporting the material were already in place. In addition, shipyards had plenty of space and so were well suited to laying out and assembling both jack-ups and semisubmersibles. Most shipbuilders also retained the large labor pools necessary for oil field fabrication (The Port Commission of the Port of Corpus Christi 1974; The Port Commission of the Port of Corpus Christi 1978).

I.H.C. Holland, a Dutch shipbuilding company, specialized in the design and construction of cargo vessels and dredges. In the late-1960s, Holland saw the advantage of expanding its operations into the mobile self-elevating offshore rig-building industry. The company partnered with R.B. LeTourneau Marine Corporation, one of the first operations to cut costs by building rigs in Singapore, to facilitate this transition and began to build jack-up rigs in Corpus Christi. During construction of the first rig at Ingleside, the Penrod 63, I.H.C. Holland bought out LeTourneau and changed the company name to I.H.C. Holland Marine Corporation. The new company experienced numerous problems and missed several delivery dates before it hired Larry Baker, Sr. to manage its Ingleside yard (RC012 2008).

Despite the project's success, I.H.C. Holland wanted to get out of the business and, in 1973, Baker purchased its Ingleside yard. Seven months later, Baker and his son formed Baker Shipbuilding Corporation (renamed Baker Marine Corporation the following year). The Bakers kept many I.H.C. Holland / LeTourneau employees and, over the years, also brought in many workers from Livingston and Orange, Texas. Between the 1973 and 1983 Baker built 57 rigs at its Ingleside yard, the majority of which went to Singapore, Egypt, South Africa, China, and elsewhere overseas. In the late-1970s, the yard employed some 3,000 Baker employees and another 3,000 subcontractors (RC012 2008). Over time, Baker Marine began building pieces in Singapore and at its other international yards, because foreign governments offered incentives and cheap labor that lowered costs and increased earnings significantly (RC012 2008).

Throughout the 1970s, even Corpus Christi's smaller shipbuilders shifted to marine technology for the petroleum industry (The Port Commission of the Port of Corpus Christi 1978). In 1978, two other companies defined by their non-traditional offshore production, Chicago Bridge and Iron Company and ETPM-USA, opened new fabrication yards in the area. Chicago Bridge, located near Baker Marine in Ingleside, constructed rigs and some very original offshore platforms. ETPM, a subsidiary of a French company, fabricated decks and jackets for fixed drilling and production operations at its yard on the Intracoastal Canal near Aransas Pass (The Port Commission of the Port of Corpus Christi 1978). The company came to Ingleside to break up the Brown & Root and McDermott monopoly, according to locals, but it only lasted a few years (RC025 2008). In 1984, Kiewit (see below) took over the ETMP yard.

7.2.3. Downturn of the 1980s

During the 1980s downturn in the petroleum industry, several local builders halted operations while others bought out their competitors and consolidated operations. While Brown & Root's

Harbor Island site produced some large projects, it was primarily an assembly yard; the company's profits came primarily from pipelines and offshore exploration. Operations at Harbor Island often proved difficult because the isolated location created challenges for getting labor to the site (Rodrigue 2009). Brown & Root sold its marine vessels at Corpus Christi to Offshore Pipelines, Incorporated and, at the end of the decade, mothballed its Harbor Island facility (Pratt, et al 1997).

The Kiewits moved to the central Coastal Bend in the 1980s. John Kiewit, a Dutch immigrant to Omaha, Nebraska, founded the original Kiewit venture in 1884. The company initially made bricks for Omaha's booming construction industry. Kiewit's descendants created Peter Kiewit Sons, Incorporated, and procured several defense contracts to build World War II army bases. The Kiewits decided to move into the offshore business in the 1980s and a retired McDermott executive led them to the vacant ETPM yard (today known as the Aransas Pass yard or the Gulf Marine Fabricators "north yard"), where the company established Gulf Marine Fabricators as a subsidiary (Rodrigue 2009, RC025 2008).

One of the Coastal Bend's most important projects began in the midst of the 1980s economic crunch. Gulf Marine Fabricators took over Chicago Bridge and Iron's facility at Ingleside Point (also known as Baker Port or today the "south yard"), and joined with Kaiser Steel as Bullwinkle Contractors to build the tallest offshore platform ever constructed, the *Bullwinkle*, for Shell Offshore, Incorporated. Gulf Marine and Kaiser won the $500 million project after bidding against Brown & Root and several other leading fabricators. Yet, when Kaiser Steel began to experience financial problems before the project started, Kiewit bought out the company (Rodrigue 2009).

Construction on *Bullwinkle* began in 1985, after the firm spent months upgrading its facility to handle the project. The biggest challenge Bullwinkle Contractors faced was finding enough skilled labor to work the project. Failing to find qualified locals, Kiewit recruited superintendents, tubular steel fabricators, welders, and fitters from southern Louisiana; 600 employees worked over a three-year period to build the platform. Bullwinkle Contractors employed unique methods to build the 1,365-foot-tall giant steel jacket. Construction crews labored half a year alone on the foundation, which weighed 50 thousand tons and required two years to complete. Deepwater access from Ingleside was a significant factor in the project's success (The Port Commission of the Port of Corpus Christi 1985-1986; Priest 2007; Rodrigue 2009).

Bullwinkle vaulted Gulf Marine to the top of the area's list of fabricators. According to the August 1988 issue of *Ocean Industry*, the project made Gulf Marine one of the area's largest industrial companies at that time (Ocean Industry 1988). The vast project brought an estimated $10 million per year to the central Coastal Bend area (The Port Commission of the Port of Corpus Christi 1985-86; Priest 2007). Designation of the port as a foreign trade zone (FTZ) in 1985 also helped the Coastal Bend economy. Corpus Christi's FTZ status, the *Bullwinkle* project's owner recalled, was a decisive factor in the move to build the huge platform in the United States rather than overseas (Weil 1986). Companies in the FTZ do not pay duties on imported goods until the finished product enters the U.S. market. This has allowed Texas to become an alternative for companies who would have found it cheaper to operate outside of the United States. Subzones of the Port of Corpus Christi FTZ include at least portions of most of the refineries near the port and four fabricators (Weil 1986; see also Appendix C).

7.2.4. Deepwater Gulf of Mexico, 1990s to 2008

Prices rebounded to some extent in the 1990s, but remained too low for expensive technological development, especially the type of aggressive projects pursued in the 1970s and early-1980s. McDermott's work at Harbor Island slowed. In 2003, the company left the facility idle, maintaining little more than a guard station at the yard's entrance. In the wake of the expansion of liquefied natural gas (LNG) operations in the Gulf of Mexico (see Section 7.3.1 below and Appendix B), several companies expressed interest in Harbor Island, but none developed successful proposals for the site. At the time of fieldwork for this study, there was no industrial activity on Harbor Island, but the land still belonged McDermott, Brown & Root, and Baker Marine. Some speculated that the companies were holding on to the land to ensure that it would not be acquired by their competitors, even if they did not intend to utilize the properties themselves. The Port Authority commissioned a master plan for the island—at least the 340 acres the port acquired in 1995—and envisioned an upscale resort/tourism development, given its proximity to the Gulf and barrier islands. That plan did not materialize either.

Kiewit maintained operations in the Coastal Bend by entering into a 1991 joint venture, with the Norwegian company, Aker Maritime, Incorporated, which specialized in concrete structures, and Gulf Marine Fabricators became Aker Gulf Marine Fabricators. In 1998, Aker Gulf Marine used the yard at Ingleside for building and repairing deepwater rigs and the yard at Aransas Pass for topside construction and piping (The Corpus Christi Caller-Times 2000a).

Corpus Christi received a boost when President Ronald Reagan signed the defense appropriations bill authorizing funding for the construction of Naval Station Ingleside. Naval Station Ingleside's purpose was "to provide logistics, base support and force protection to all the tenant commands that make up the Mine Warfare forces" (Navy Region Southeast n.d.). Some 3,000 civilian, military, and sub-contracted workers were employed at the site. With the end of the Cold War, the Navy expansion ended, and Naval Station Ingleside became the "Mine Warfare Capital." Incorporated into the Base Realignment and Closure (BRAC) process, Naval Station Ingleside closed in April 2010. The Port of Corpus Christi took control of the 912-acre property in the fall of that year and later considered development proposals, one of them plans for creation of a facility to maintain Gulf of Mexico drilling rigs (Brezosky 2010).

Moving into the 21st century, Coastal Bend petroleum fabricators enhanced their portfolios with projects destined for other parts of the world. Several also opened or expanded yards in other countries, citing lower labor costs as a major factor. In 2000, Coflexip Stena Offshore purchased Aker Maritime and Kiewit's partnership interest in Aker Gulf Marine Fabricators, and the facility again was renamed Gulf Marine Fabricators. In 2001, the French company Technip bought Coflexip. That same year, Kiewit created Kiewit Offshore Services and built a new facility in Ingleside. In 2004, Kiewit did all the topside installation for BP's *Thunder Horse* semi-submersible at its Ingleside yard. Two years later, the fabricator built the hull for Independence Hub, the "deepest floating production facility in the world," according to *Offshore* (2006). Kiewit Offshore Services also diversified into defense-contracting work and, like its predecessors, collaborated with other yards to complete large projects (Marine Log 2005).

In 2006, Gulf Island Fabricators of Houma, Louisiana bought Gulf Marine's facilities and aimed to increase productivity by bringing skills and technology from Gulf Island's four Louisiana facilities (Chirinos 2006). With the purchase, Gulf Island Fabricators acquired yards on the Gulf Intracoastal Waterway with a total of 400 acres with direct access to the Gulf of Mexico: the North Yard in Aransas Pass is on the Intracoastal Waterway, three miles north of the Corpus Christi Ship Channel, and the South Yard in Ingleside sits at the intersection of the Gulf

Intracoastal Waterway and the Corpus Christi Ship Channel. These specialized yards have deep basins for offloading heavy ships, enormous graving docks, and 4,000-ton specialized lifting devices for large offshore structures in the Gulf of Mexico. Recent projects include the 2006 fabrication of the topsides for Atlantia Offshore Limited's *Neptune* platform in 4,300 feet of water, the 2006 construction of topsides for Chevron's *Blind Faith* platform for 7,000 feet of water, the 2008 fabrication of the topsides on the second MinDOC T3 hill for ATP's Telemark Hub deepwater development project, and the 2008 construction of the deck for ATP's Cheviot deepwater project (Gulf Island Fabrication 2010).

The success of the region's large fabricators led other companies—such as Performance Energy Services, Dynamic Industries, South Steel and Supply, and State Service—to open facilities there as well. In contrast to the considerable activity related to fabrication of platforms, as of 2009 no companies in the Coastal Bend were manufacturing new rigs (though some still repair and refurbish existing ones), and few shipbuilders were constructing new vessels. Long-time shipbuilder, John Bludworth, whose father operated yards in Houston and Pasadena, Texas in the early-1950s, started a yard in Corpus Christi in 1999. Bludworth Shipyard builds tow boats for inland and coastal barge traffic and contains a 4,000-ton drydock for other operations (John Bludworth Shipyard, LLC 2010). Though the company has yards in New Orleans and in Mexico, its main headquarters is located at its fabrication center on the Corpus Christi Ship Channel.

In addition to the large yards, the region attracted smaller yards specializing in less extensive construction projects and repair work. Yards linked to the fabrication and shipbuilding industry include H&S Constructors Fabrication, Roberts Fabrication, Gulf Cooper ship repairs, and Southwest Marine shipyard, builders of offshore military systems. Offshore Specialty Fabricators Mooring, which specialized in refurbishing petroleum-industry vessels, closed in 2008. Baker Marine maintains its yard at Ingleside, but the operation only employs three people. The company mostly sells parts, such as bearings and gears for the rigs it built during the 1970s and 1980s (RC012 2008).

Several contractors, along with new rental and supplier businesses, relocated to the central Coastal Bend after 2000 (RC028 2008; RC031 2008). They opened due to the activity of the two largest yards, some observers noted, while others arrived after the 2005 hurricanes, arguing that they were able to acquire more workers to keep up with offshore repairs than in other locations along the Gulf Coast (RC033 2008; RC046 2008).

7.3. Fabrication and Shipbuilding in the Context of Other Occupations and Industries

As noted above, the central Coastal Bend has a rich history associated with shipbuilding and fabrication, but this industry is only one in the larger suite of industries, most of which are related to oil and gas. This region, like its other petroleum industry-dependent neighbors, suffered from the 1980s worldwide collapse of oil prices. At that time, the number of yards involved in petroleum enterprises and fabrication contracted. The oil companies and fabricators consolidated their operations and moved laborers to a few centers on the Gulf Coast. Although some fabricators in the Coastal Bend continued operations, they eliminated yards and workers considered expendable. The area's economy was significantly depressed throughout the 1980s and into the first half of the 1990s. However, the economy experienced a significant and sustained upturn at the end of the 1990s and the region's economy, still based primarily on the petrochemical industry, has generally remained relatively strong since then.

Although once a major part of the local economy, fishing had become only a minor contributor by the end of the 20th century. As reflected in the data on commercial fishery landings and value at Aransas Pass/Rockport (NMFS n.d.), the region was no longer significant nationally. Between 1999 and 2010, the Coastal Bend's only port among the top 95 U.S. ports in terms of quantity seafood or value of fishery landings was Aransas Pass/Rockport, and only for 1998 (8.5 million pounds valued at $15.5 million), 1999 (6.4 million pounds valued at $15.0 million), 2000 (6.7 million pounds valued at $17.8 million), 2001 (5.8 million pounds valued at $12.6 million), and 2002 (5.2 million pounds valued at $8.6 million).

Both Ingleside and Aransas Pass have also worked to attract new development. As already noted, business and political leaders sought to boost Ingleside's growth as a bedroom community. A billboard on the causeway of Highway 361 leaving Ingleside, en route to Corpus Christi, reads, "If you lived in Ingleside, you would be home already." During fieldwork for this study, efforts were also underway to push ahead the development of the area north of the Naval Station and east of Gulf Marine Fabricator's properties. The developers and the city talked of 2,600 upscale homes, with various conveniences that home owners would require, such as a (RC009 2008) course, shops, restaurants, and a movie theater. Aransas Pass has recently focused on boosting tourism. Many residents viewed the city's official acquisition of Conn Brown Harbor in the spring of 2008 as a major step in the right direction.

7.3.1. Liquefied Natural Gas

The central Coastal Bend became a hot spot for investors seeking sites for facilities to receive, regasify, and deliver LNG (see Appendix B). Three facilities successfully went through the permitting process. As one of the study participants noted, "People slobbered all over themselves to get them here" (SE001 2007). In addition, Harbor Island was slated to become the construction site for massive concrete storage containers for an offshore LNG terminal that held a permit elsewhere. This led one individual to suggest that facility-proposing companies were taking a "shotgun" approach—seeking permits at a number of sites throughout the Gulf Coast (SE001 2007). Others suggested that the Corpus Christi area had some comparative advantages.

The proposed facilities were to be located along La Quinta Channel on or adjacent to the plant sites operated by Dupont, Sherwin, and OxyChem—in other words, the petrochemical band on the northeast side of the bay, from Portland down to Ingleside. Three entities were involved: (1) Vista del Sol LNG Terminal/Vista del Sol Pipeline LP, affiliates of Exxon Mobil; (2) Cheniere Corpus Christi Pipeline Company/Corpus Christi LNG, LP; and (3) Ingleside Energy Center LLC/San Patricio Pipeline LLC (collectively known as Ingleside San Patricio), affiliated with Occidental Chemical Company. None of the facilities granted permits was built. The recession and technological developments that made shale gas feasible contributed to a glut of domestic gas supplies.

7.3.2. Trade

The Port of Corpus Christi's location close to Mexico, as well as its 1985 designation as a Foreign Trade Zone (FTZ) and role as a hub for the transportation of petroleum, has helped shape the central Coastal Bend. Trade between Mexico and the area now including both the central Coastal Bend and South Texas predated the existence of the United States, but increased substantially in the 20th century. Before the 1919 hurricane destroyed the original Harbor Island terminal, South Texas received crude from Mexico's Panuco River region. After the hurricane, petroleum shipments moved to the new Port of Corpus Christi, where in later years their volume

greatly increased. In the 1930s, sizeable shipments of lead and zinc ingots produced in Mexico shipped out to world markets through Corpus Christi, and the port also exported the Yucatan's cottonseed cake and sisal rope fiber. After World War II, the U.S. shipped large quantities of American cement south of the border and imported pineapples from Veracruz. Meanwhile, Mexico canned millions of pounds of beef and then shipped it through Corpus to the starving populations in Europe (The Port Commission of the Port of Corpus Christi 1980-81).

Northern Mexico's great untapped mineral deposits were closer to Corpus than to Mexico's port at Tampico, and metals processed near the port moved out to domestic and world markets in a manufactured state. Likewise, automobile assembly plants and tire manufactories located near Corpus Christi due to the accessibility of raw materials, and the low cost of reaching the developing markets of Mexico, Central and South America, and the Far East. Corpus Christi possessed the added advantage of direct rail connections with Mexico and more favorable rail shipment rates than Mexico (The Port Commission of the Port of Corpus Christi 1932).

Oil shipments from Mexico increased during the 1960s and early-1970s as domestic U.S. production declined, while a significant amount of Texas grain moved in the opposite direction. The port also took in pig iron, scrap iron, metallurgical coke, and iron ore for shipment to the steel mills of Nuevo Léon and Coahuila. In 1979, the port recorded 2.7 million tons of trade with Mexico, mostly in oil, ores, and grain (The Port Commission of the Port of Corpus Christi 1980-81).

Port officials sought to take advantage of the early-1980s Mexican industrial revolution. Don Rodman, director of public affairs for the port, began using advertisements and presentations in Spanish to promote Corpus Christi's deep water, rail car availability, and bulk handling facilities to attract Mexican businesses. One ad read, "The Port of Corpus Christi is still part of Mexico." Port Trade Development Director Perry McGee explained, "Of course South Texas was part of Mexico in an earlier era, but we are trying to say more here. . . . We see South Texas and Mexico bound together by commerce and the cultural heritage of most of the region's people . . . . By working together to build trade bridges we will have a common future" (The Port Commission of the Port of Corpus Christi 1981-82).

More recently, the port has had a fairly consistent pattern of oil imports from Mexico as well as trade in iron ore, bulk grain, and cement, but during the study period it was responding to the booming steel industry south of the border. When steel is in great demand, the mills in northern Mexico receive iron ore pellets from overseas, which must then be reshipped to a port, off-loaded, and transported by rail to Monterrey, Saltillo, Monclova, and Piedras Negras. The Mexican national railroad does not have enough railcars to meet the demand, so the pellets are shipped in American railcars. Rodman claimed that the American railroad companies would rather carry the goods from Corpus to Laredo to Monterrey than from Brownsville to Monterrey (Corpus Christi Caller-Times 1980). The North American Free Trade Agreement (NAFTA) significantly increased U.S. trade with Mexico. The proximity of the central Coastal Bend makes Mexico a logical trading partner, and the port receives more products from Mexico than any other foreign nation.

The Port of Corpus Christi was designated a Free Trade Zone (FTZ) in 1985. FTZs are intended to offset customs advantages available to overseas producers who compete with domestic industry and provide incentives for companies to remain on U.S. territory, rather than move their operations outside the country (MacLeod 2000; see Appendix C). FTZ No. 122, Corpus Christi, consists of six general-purpose sites and 14 subzones, four of which are sites of fabricators (U.S. Import Administration 2011; see Appendix C). The Port of Corpus Christi

offers support to both the general-purpose and subzone operators in order to stimulate international trade, and create jobs and investment.

7.4. Influence of the Industry on the Physical Features of the Region

The shipbuilders and fabricators of the central Coastal Bend have influenced the region's physical layout and infrastructure. Industrial activity is concentrated along the water bodies, to the north of Corpus Christi along the southern edge of Nueces Bay and near the port; across Corpus Christi Bay along the circuit surrounding Ingleside and known as the Ingleside Point loop; on relatively small parcels on La Quinta Channel; and on the Jewell Fulton Harbor, which in turn connects to La Quinta Channel. Fabrication takes place, for the most part, in the southern part of the area, closer to Ingleside due to better deepwater access, while support industries are located to the north and in Aransas Pass. Figure 7.5 characterizes land use types found and distributed in the Coastal Bend based on classifications from the National Land Cover Dataset (NLCD, completed in 2001). It clearly shows the concentration of industrial and heavy commercial land use throughout the region.

Although the central Coastal Bend supports considerable industrial activity, recent conflicts over La Quinta Channel's development and the use of property that had been devoted to Naval Station Ingleside reflect efforts by some political and business leaders to shift toward upscale bedroom communities, even when those would be located in the midst of existing and planned industrial facilities. By 2010, despite much debate, those supporting industrial expansion, much of it connected to existing fabrication and petroleum industries, appeared to have prevailed. At La Quinta, the planned container port was to be situated adjacent to a new high-end subdivision, raising some concerns about and opposition to the proximity of the two. Plans for the container port were set aside, but the port began construction of a multi-purpose dock and terminal project instead. Led by a Local Redevelopment Authority, numerous plans for Naval Station Ingleside were put forward and reviewed (SE003 2007). The naval facility had operated largely as a training facility and, even though it had deepwater access, was not yet converted for industrial use. Therefore, the new plans included an educational facility (e.g., a marine research institute) and light industry, such as yards to construct coastal patrol craft. Included as well was a proposal for using the site to maintain drilling rigs (Brezosky 2010).

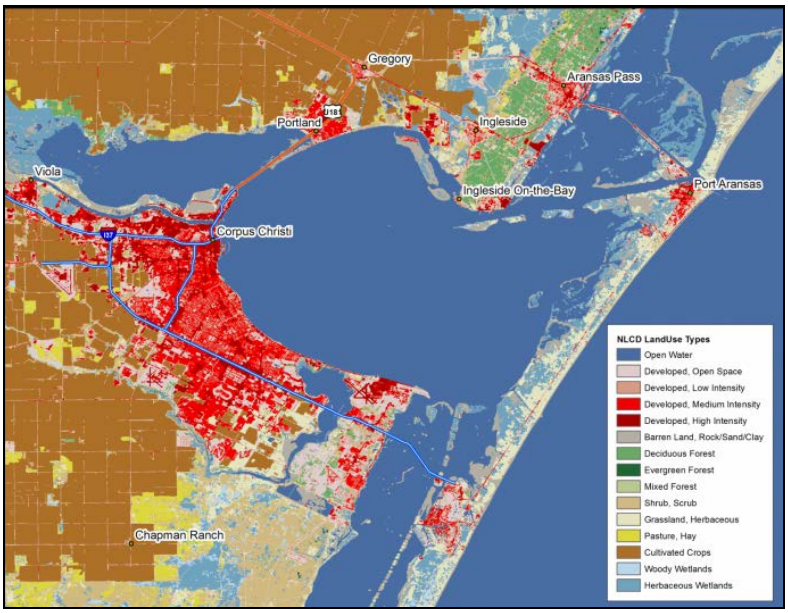

Figure 7.5.a. Land Use Classifications from the 2001 National Land Cover Dataset (NLCD) for communities south of Corpus Christi Bay.

Source: Multi-Resolution Land Characteristics Consortium 2001.

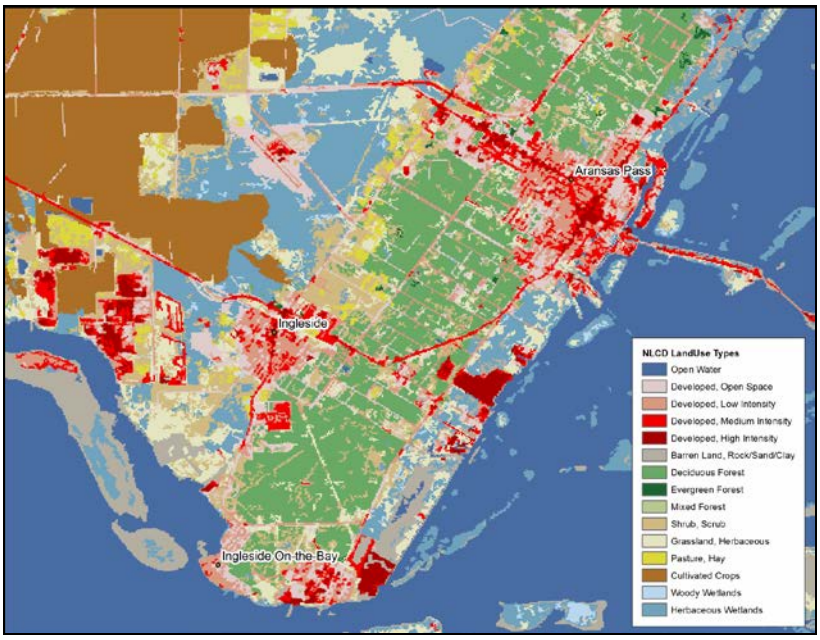

Figure 7.5.b. Land Use Classifications from the 2001 National Land Cover Dataset (NLCD) for communities north of Corpus Christi Bay.

Source: Multi-Resolution Land Characteristics Consortium 2001.

7.4.1. Waterways, Roadways, and Airports

The central Coastal Bend's communities and industrial areas are well connected by air, land, and water. The fabrication and shipyards lie on the North Bay, which is accessible from Corpus Christi along Highway 361, a well-maintained four-lane highway. However, access to the major yards, located just beyond Ingleside's retail area, is sometimes difficult. Traffic during shift changes at the yards is staggering.

The region's roads are inadequate for the traffic going in either direction. Products that cannot enter Corpus Christi Bay by ship are unloaded in Ingleside and shipped by truck to Corpus Christi. For example, windmill parts for the area's new windfarms were unloaded to the Kiewit yard and then transported by semi-truck across the bay. When the windmills were unloaded in Ingleside, they congested traffic as the trucks hauling them worked to round the town's street corners in order to head for Corpus Christi, where the windmills would be stored until mounting. Accidents are particularly frequent around the Gulf Marine Fabricators yards, located on FM 2725, a two-lane road with soft shoulders. When Kiewit began construction, a turning lane leading to the yard was created on FM1069, but this did not diminish traffic flow or accidents.

The Intracoastal Waterway runs along the coast, extending beyond Aransas Pass (particularly the Gulf Marine Fabricators yards) and Ingleside Point, before crossing the Corpus Christi Bay. The Intracoastal is maintained at 12 feet deep and 125 feet wide. The Corpus Christi Ship Channel is an important geographical feature. Already dredged to 45 feet, engineers have recommended dredging the channel to 52 feet, but federal funding is still pending (The Port of Corpus Christi 2009d). At Ingleside, the La Quinta spurs off the Ship Channel, giving Kiewit Offshore Services the distinct advantage of having deepwater access.

7.4.2. Housing, Commuting, and Traffic

Housing in the area north of Corpus Christi Bay is generally separated from industry, although, as noted earlier, several recent development plans threatened to bring residential and industrial areas closer together. During fieldwork for this study, newer homes were being built in Ingleside north of its industrial areas, whereas older homes were closer to them. The Aransas Pass yard of Gulf Marine Fabricators is closer to Ingleside's residential areas than to Aransas Pass. Thus, compared to Ingleside, local residents perceive Aransas Pass as less an industrial center, despite its large number of chain motels that have long provided housing for industry laborers. Unlike communities elsewhere along the coast, residents and community leaders of Aransas Pass did not discuss the existence of or raise concerns about "labor camps" of any kind.

In 1970, the majority of the housing units in the Corpus Christi MSA were owner-occupied (53,584 or 64.8%), while 29,070 units (35.2%) were renter-occupied. The numbers increased substantially by 2007, but the overall proportions of homeowners and renters did not change much: 95,203 units (64.6%) were owner-occupied in that year and 55,647 units were renter-occupied (35.4%). Ingleside on the Bay has the central Coastal Bend's highest rate of home ownership, and the lowest are in Corpus Christi and Ingleside (see Figure 7.6).

Residents spoke of the affordability of homes as a draw to the area in general (RC008 2008). Across the region, real gross median rent increased in all decades since the 1970s except for the 1980s. Meanwhile, the real gross median rent increased 31.6% from 1970 to 1980, 12.8% from 1990-2000, and 13.2% from 2000-2007, but decreased 0.9% in the 1980s. The most substantial increases in the gross median rents occurred in Corpus Christi and Ingleside. As of 2000,

Portland had the highest median rent ($778) and Aransas Pass ($533) still had the lowest. The greatest changes during 1970-2000 was a decrease in the proportion of people with rents in the lowest 20th national percentile and an increase in the proportion of people with rents in the middle 60th national percentile. Portland has the smallest proportion of rents in the lowest 20th national percentile (6.2%), while the largest proportions are in Aransas Pass (34.4%), the Corpus Christi suburbs (33.7%), and Rockport (32.6%). The real median home value increased 48% from 1970 to 2000. However, it dropped 6.2% during the economic tumult of the 1980s, before increasing 1.0% in the 1990s and 18.8% during 2000-2007. The largest increases in median home values occurred in Portland (61.3%) and Ingleside (73.9%) from 1970 to 2000. Contrasting sharply with rents, 50% of the home values in the Corpus Christi MSA were in the lowest 20th national percentile as of 2000, increasing from 39.8% since 1970 (see Appendix J, pp. 93 - 100).

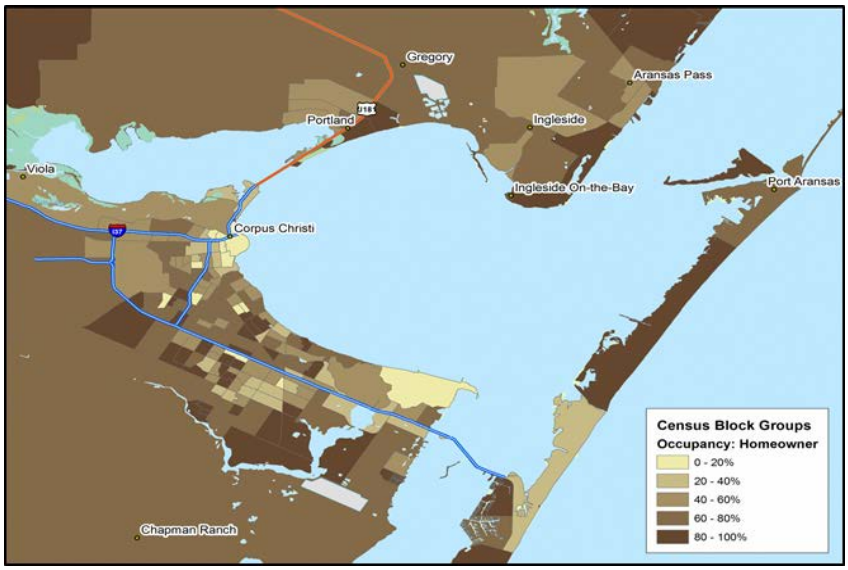

Figure 7.6. Housing occupancy: Homeowners.

Source: U.S. Census Bureau 2000 Summary File 1; U.S. Census Bureau 2010 Summary File 1.

Aransas Pass exhibits the highest concentration of low home values: 64.2% of the homes fall in the lowest national 20th national percentile. The highest concentrations of high home values are in Rockport and Port Aransas. In the Corpus Christi MSA, housing is comparatively more affordable and more available. Housing units have increased, and the average number of building permits has increased across the MSA (see Appendix J, pp. 95 - 100).

The central Coastal Bend's housing stock was not affected by the hurricanes of 2005, although subsequent recovery efforts up the coast affected the availability of local labor, as noted in chapters about other parts of the study area. The proportion of vacant units in the Corpus Christi MSA grew between 1970 (8.4%) and 2007 (13.7%). As of 2000, the percentage of vacant units was highest in Port Aransas (17.6%), Rockport (14.5%) and the Corpus Christi suburbs (12.5%) and lowest in Portland (5.8%), Ingleside on the Bay (7.8%), and Ingleside (8.1%).

During fieldwork for this study, as already reported, community leaders in San Patricio County spoke of development plans for 2,600 upscale homes closer to the two large yards, north of what was at that time the naval base. In its early-years, Larry Baker bought these same 3,000

acres to build a shipbuilding/multi-purpose facility, but in 1986, the Corps of Engineers stopped the project due to harmful environmental effects (RC012 2008).

Many contingent workers, especially those from the Rio Grande Valley, and foreign workers live in hotels and motels with extended rates. The Texas state government passed a legislative "incentive" for industry-related short-term hotel stays: if workers stay in rooms more than 30 days, they do not have to pay the hotel occupancy tax. Since the early- to mid-2000s, Ingleside has added three large chain motels with extended stay rates and kitchenettes, likely spurred by specific, big fabrication projects such as *Thunder Horse*. Aransas Pass has, in addition to several large chain-type motels, smaller and more affordable kitchenettes that rent by the week or month. Several apartment complexes specialize in month-to-month leases. Trailer parks, both for mobile homes and for RVs, in the Aransas Pass area also service industry labor, along with "winter Texans." Some hotels experience competition for rooms between corporate needs for worker housing and tourist demands. Although hotels can charge tourists more for rooms, some nevertheless rent rooms to workers, in order to retain their corporate clients, who provide them business year-round, unlike visitors who are in the area for only a small part of the year (SE005 2007).

Affordable housing contributes to the availability of a regional workforce. As Table 7.1 indicates, there is considerable commuting within the region. The 1970s were a period of immense transformation for Aransas and San Patricio County, as the number of residents exiting for work exceeded the number of resident entering for work. This pattern has not occurred in Nueces County. The number of Aransas residents commuting to other counties increased 743% from 356 in 1970 to 3,000 in 2000. In 2000, 36.3% of Aransas County's workforce left the county—a high percentage compared to the other communities in this study. Aransas residents who commute work primarily in Nueces County (44.2%) and San Patricio County (45.3%). Similarly, 42.3% of San Patricio County's workforce leaves the county, commuting primarily to Nueces (81.9%) and Aransas counties (7.2%). In contrast, only 6.8% of Nueces County's workforce left the county. Nueces residents who commute work in San Patricio (45.4%), Kleberg County (14.9%), and Jim Wells County (10.0%) (see Appendix J, pp. 100 – 103).

Table 7.1.

Work Commuting Patterns by Decade for Nueces, Aransas, and San Patricio Counties from 1970 to 2000

County		1970	1980	1990	2000
Nueces	Staying	72,799	108,755	113,225	122,370
	Entering	5,669	12,600	13,711	17,027
	Leaving	3,878	6,211	8,167	8,897
Aransas	Staying	1,681	3,136	4,474	5,255
	Entering	450	838	835	1,140
	Leaving	356	1,449	2,156	3,000
San Patricio	Staying	8,580	13,538	12,860	14,990
	Entering	1,839	3,359	4,659	6,660
	Leaving	4,284	8,405	9,132	11,002

Source: U.S. Census Bureau, Journey to Work and Place of Work Data.

Employment in the service sector accounts for worker commuting in two of the three counties. The exception is San Patricio County, where federal civilian or military employment attracted more commuters. (This will change, however, with the closure of Naval Station Ingleside.) In Nueces County, 21.5% of the manufacturing workers are commuters, with 42% arriving from San Patricio County and 20.9% arriving from Kleberg County. In San Patricio County, 50.8% of the manufacturing workers are commuters, 67.6% from Nueces County and 16.3% from Aransas County. In Aransas, 8.9% of manufacturing workers are commuters and most of these workers commute from Nueces and San Patricio. In all, these three counties rely upon each other for commuters–this trend includes manufacturing.

7.4.3. Recent Developments at the Port of Corpus Christi

The Port of Corpus Christi is the sixth largest port in the United States. The Port of Corpus Christi Authority, a legal entity governed by a Port Commission, owns, operates, or leases port properties and facilities around the greater Corpus Christi Bay area (see Figure 7.7). The seven commissioners, three of whom are appointed by the Corpus Christ City Council, three by the Nueces County Commissioners Court, and one by the San Patricio County Commissioners Court, encourage industrial expansion, attract new cargo, build and maintaining public terminals, set operational policy and cooperate with the federal government as a local sponsor of efforts to maintain and further improve vital navigation channels (The Port of Corpus Christi 2009e).

Figure 7.7. Port of Corpus Christi and nearby harbors.

Map was created in 2011 using data packages included with the ArcGIS software suite. Sources used to create these data layers included: ArcWorld/ESRI, National Atlas of the United States, Tele Atlas, U.S. Bureau of Transportation Statistics, U.S. Census, and U.S. Geological Survey.

The port has evolved in the post-9-11 era. In 2001, petroleum constituted 89.4% of the tonnage handled there (Brogan 2001). In 2004, the port opened a security command center to monitor all ship channel activity from the Gulf of Mexico to the end of the harbor, placing surveillance cameras at other strategic locations and hiring guards to patrol the port area 24 hours a day. In addition, all port personnel were required to undergo background checks and carry identification cards (The Corpus Christi Caller-Times 2006a). Two years later, Washington approved a major ports security bill providing new steps to "help prevent terrorists from sneaking a nuclear, chemical or germ weapon into the United States inside one of the 11 million shipping containers that enter the nation each year" (USA Today 2006). Corpus Christi, as one of the nation's largest ports, as well as a petrochemical destination and strategic military port, had already received about $17 million in federal grants for port security prior to 2006. The new legislation approved $400 million per year for the next five years for "risk-based grants."

Increasing security while maintaining open global competition at the port has proved challenging. The Ocean Security Initiative Conference, held at the Corpus Christi Ortiz International Center in 2007, focused on these issues. More than 200 science, business, and government leaders from some 25 countries met at the summit to share ideas and develop strategies. The three-day conference's participants coined the word "coopetition" and the ambassador from Singapore explained its significance: "Part of the competiveness is showing that your port is safe . . . we cooperate so we may compete in an open and free market" (The Corpus Christi Caller-Times 2007a). Port Chairman Ruben Bonilla observed in 2007 that Corpus Christi was "playing catch-up" with the explosion of global trade coming from Asia and South America through Mexico; Houston was capturing about 80% of that market. Port leaders hoped to shift business from Asian and South American companies moving American-bound products

(everything from electronics and auto parts to clothing and toys) away from the west coast, particularly Long Beach, California, to move cargo through ports and rail in Mexico This approach would shorten the trip for products to reach their destination by four to seven days, be significantly cheaper, and avoid the congested port at Long Beach (The Corpus Christi Caller-Times 2007b).

7.4.4. Economic and Industrial Development

The Coastal Bend study area has several entities, both public and private, dedicated to promoting economic and industrial development. The Coastal Bend region is also served by a Metropolitan Planning Organization (MPO). Federal law requires every metropolitan area with a population of more than 50,000 persons to designate an MPO for transportation, in order to qualify for federal highway or transit assistance. The Corpus Christi MPO (CCMPO) addresses transportation planning and traffic safety for portions of Nueces, San Patricio, and Kleberg counties along the South Texas Coastal Bend (Corpus Christi Metropolitan Planning Organization 2010).

North of Corpus Christi Bay and Nueces Bay, the San Patricio Economic Development Corporation brings together public and private partners to enhance the business environment for existing and new businesses, stimulate job growth, and market the area to attract new businesses, residents, and tourists. In recent years, local officials, planners, and economic development entities have attempted to create a shared vision of regional economic growth and development. Planning has focused on the La Quinta Terminal, where community leaders advertise ocean shipping, along with interstate and rail transportation (San Patricio County Economic Development Corporation 2009 Welcome to San Patricio). To attract new industry, San Patricio County offers a tax abatement program. The San Patricio County Commissioner's Court considers corporate petitions on a case-by-case basis and, when it approves them, property taxes are abated during the term of the agreement in accordance with a schedule established by the court and the petitioner. Among the criteria for tax-abatement decisions, the most important are the number of jobs that a corporation will create and sustain, and the dollar amount of its capital investment (San Patricio County Economic Development Corporation 2009 Business Climate—Incentives).

South of the bays, the Corpus Christi Regional Economic Development Corporation, a non-profit organization, is responsible for creating, managing, and supervising programs and activities that promote, assist, and enhance economic development within the City of Corpus Christi. The corporation's partners include the City of Corpus Christi, the Port of Corpus Christi Authority, and over 180 private-sector members. The corporation is governed by a 25-member Board of Directors whose members are appointed by the city, port, and other corporation members. Through programs to attract businesses attraction and retain or expand businesses, the corporation focuses its economic development efforts on the creation of new primary jobs and new investment in 10 industrial sectors. The main sectors—oil and gas exploration, petrochemicals, manufacturing/fabrication, and water transportation (deepwater and ocean)—reflect the continuing influence of the petroleum and port-related industries on the region (Corpus Christi Regional Economic Development Corporation 2007).[27]

[27] The Corpus Christi Regional Economic Development Corporation's other focal areas are: electric power generation; electronic retailing; warehousing, distribution, and logistics; knowledge-based professional services; and enterprise management.

The need for a new direction in economic development has also been expressed locally. *Bold Future for the Coastal Bend*, initiated in 2008, was a two-year process to create a shared vision and action plan for the region, supported by Texas A&M University-Corpus Christi and Del Mar College, Nueces and San Patricio counties, the City of Corpus Christi, the economic development entities of Corpus Christi and San Patricio County, the Metropolitan Planning Organization, the Port of Corpus Christi, and many other regional partners. *Bold Future* was touted as the most extensive participatory process in the history of the Coastal Bend. Guided by a vision task force, community ambassadors, and a stakeholder advisory committee, thousands of Coastal Bend residents from Nueces County and San Patricio County shared their ideas; refined, prioritized and validated those ideas; and developed a vision for the region (Bold Future for the Coastal Bend 2010).

Several other local efforts are aimed at small businesses and entrepreneurship in the Coastal Bend. The Del Mar College Center for Economic Development provides services to the region's small businesses. The college's footprint on the landscape has recently been expanded to include a campus in northwest Corpus Christi, and it has begun exploring green energy technology programs (Malan 2010). In 2009, the Coastal Bend Business Innovation Center at Texas A&M University-Corpus Christi was established to stimulate job growth by encouraging entrepreneurial economic development of companies that, once established, are committed to remain in the Coastal Bend (Texas A&M University-Corpus Christi 2011).

7.5. INFLUENCE OF THE INDUSTRY ON THE POPULATION OF THE REGION

The influence of the shipbuilding and fabrication industry on the central Coastal Bend's population is less immediately obvious than its influence on the region's physical features. Nevertheless, the industry's influence on the population can be discerned from both qualitative and quantitative data. Shipbuilding and fabrication have affected, at least in part, population growth and decline, the development and maintenance of workforce development and training programs, and tax revenues. Within sight of downtown Corpus Christi, and indicating the industry's continuous labor needs, are large, permanent billboards advertising jobs at the area's large fabrication yards. Along the causeway, as well as throughout Aransas Pass and Ingleside, unmistakable company trucks are parked at restaurants and driven around city streets, reminding residents and visitors alike of the number of employees that local facilities hire. And, on clear nights, large cranes glow in the fabrication yards, indicating the near-constant activity when work is booming. Yet, despite its visibility and size, the fabrication and shipbuilding industry in the Corpus Christi MSA accounts for less than 6% of all private employment, and there has been a clear shift in private sector employment away from manufacturing and toward services and retail trade. On the surface the employee headcount in manufacturing has remained unchanged over the last 30 years, but just beneath the surface there is evidence of employment volatility over the decades. Now, manufacturing employment comprises a much smaller percentage of total employment and total private employment. At the same time, however, companies have argued that they struggle to find workers. As a result, they distinguish hiring core workers from hiring contingent workers, and they have used guest workers on H-2B visas. The following sections summarize trends in employment and wages in the central Coastal Bend.

7.5.1. General Population Dynamics

The populations of all three central Coastal Bend counties—Aransas, Nueces, and San Patricio—have increased since 1970 (see Figures 7.8 and 7.9 and Appendix J, pp. 58 - 63). The rate of growth in Aransas County is particularly noteworthy, because it exceeds the growth rates for Nueces and San Patricio counties, and the State of Texas. However, each county suffered population losses around 1987 and 2001. Population decreases at these times corresponded with declines in manufacturing employment.[28]

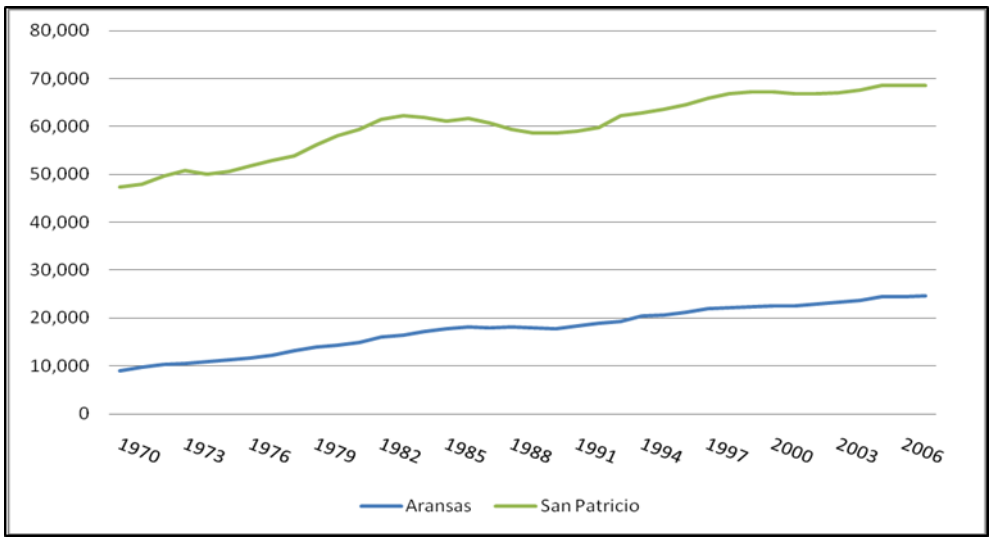

Figure 7.8.a. Population changes in Aransas and San Patricio Counties from 1970 to 2007.

Source: U.S. Census Bureau, Population Estimates, County.

[28] Federal statistical agencies use the North American Industry Classification System (NAICS) to classify business establishments for the purpose of collecting, analyzing, and publishing statistical data related to the U.S. business economy. This report uses the NAICS to define employment categories. The NAICS code for shipbuilding, 3366, includes rig and platform construction.

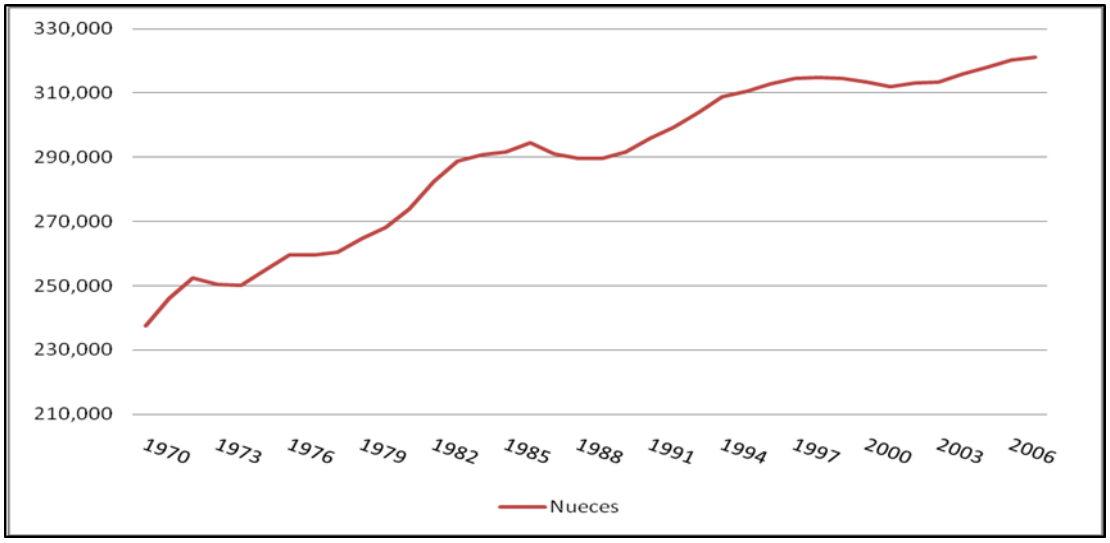

Figure 7.8.b. Population changes in Nueces County from 1970 to 2007.

Source: U.S. Census Bureau, Population Estimates, County.

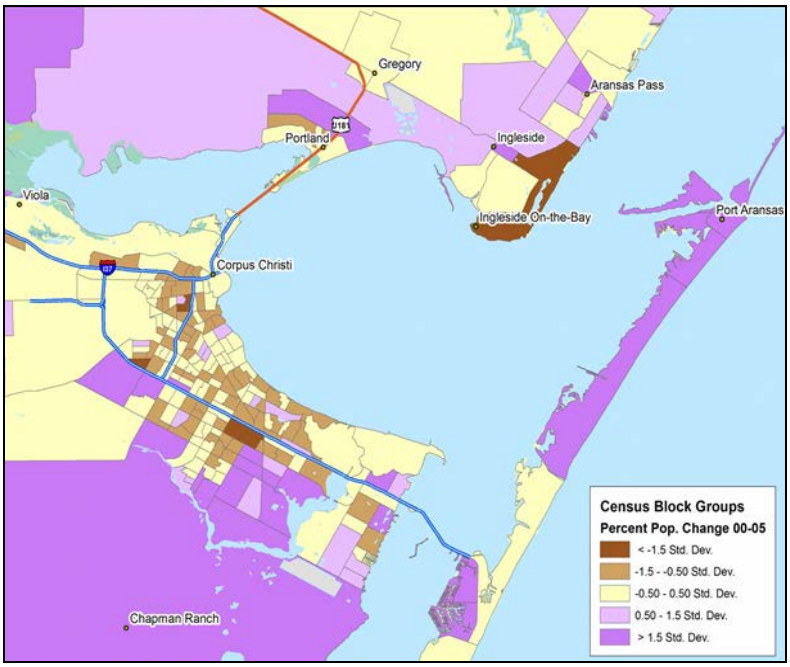

Figure 7.9. Percent population change in the Coastal Bend-Census 2000 to Census 2005.

Source: U.S. Census Bureau 2000 Summary File 1; U.S. Census Bureau 2010 Summary File 1.

Since 1990, Aransas County has experienced net in-migration, contributing to the its population increase, while Nueces County has experienced net out-migration, particularly due to a large exodus of residents from during 1998-2001. In San Patricio County, the trend shifted in 2000 from net in-migration before that time to net out-migration afterward. Meanwhile, the

household composition of the Corpus Christi MSA has been changing, with the number of married couples decreasing 23.4% and the number of single parents increasing 82%. In 1970, 86.4% of all households included married couples, decreasing to 65.8% in 2000 (see Appendix J, pp. 70 - 77).

The household composition of the Corpus Christi MSA is changing (see Appendix J, pp. 76 - 77), with the number of married couples decreasing 23.4% and the number of single parents increasing 82%. In 1970, 86.4% of all households included married couples, decreasing to 65.8% in 2000.

Despite the wealth generated by the petroleum industry, and the growth that various communities have seen over the decades of expansion, the area experiences significant social and economic inequality. Though not to the extent of areas such as the Golden Triangle, where some urban cores are being abandoned by movement into surrounding areas, the central Coastal Bend has also seen migration from urban areas and the growth of bedroom communities such as Portland and Ingleside on the Bay.

Median incomes for residents of the three central Coastal Bend counties—Aransas ($38,281), Nueces ($41,140), and San Patricio ($40,506)—lag behind the $47,563 median income for the State of Texas (see Appendix J, pp. 77 - 81). However, in all three counties, the proportion of people below the poverty line decreased between 1989 and 2007, to just under 20%. For the entire region, Aransas Pass and Corpus Christi have the highest proportions of people living below the poverty line, while Portland and Ingleside have the lowest. There has been an overall downward shift in income. From 1969 to 1999, the proportion of people in the Corpus Christi MSA with incomes in the lowest 20th national percentile increased from 27.7% to 28.5%; the proportion in the middle 60th national percentile increased from 58.3% to 58.8%; and the proportion in the upper 20th national percentile decreased from 14% to 12.7%. Aransas Pass has the highest proportion of families with incomes in the lowest 20th percentile. Ingleside and Ingleside on the Bay have the highest proportion of families with incomes in the middle 60th percentile, while Rockport and Portland have the highest proportion of families with incomes in the highest 20th percentile. Immigrant and migrant workers are inclined to live in Aransas Pass and other areas where rental rates are cheaper than elsewhere and it is possible to rent units by the month rather than the year. The resulting stratification is noteworthy, because low-rent areas are far removed from newer housing developments, which have access to many more services and amenities.

7.5.2. Workforce Development and Trends

In general, the central Coastal Bend has a robust workforce. During 2000-2007, the working-age male population in Aransas County increased 9.7%, while in Nueces County that population increased only 2.1% (below the overall population's growth), and in San Patricio, it actually decreased 2.7%. Across the central Coastal Bend, unemployment has decreased, after peaking in the early-1990s, (Figure 7.10).

For the past 70 years, industry employment trends have generally followed the expansion, retraction, and diversification of the shipbuilding and fabrication industry (see Appendix J, pp. 103 - 111). Large numbers of workers in Corpus Christi moved into shipbuilding during World War II, before moving into fabrication during the post-war years, with the numbers increasing most dramatically in the late-1970s. The owner of one of the first fabrication facilities in the region recalled that when the 1970s brought more workers to the area, his company was initially relieved. Previously, the company had struggled to find qualified welders and fitters, but the

boom created a larger labor pool and many fabricators taught welding at their yards. “We’d get theirs, they’d get ours… and a lot of times we were swapping people out because they’d come to us for a few pennies more and go to them for a few pennies more type of thing . . . . [W]e built a hell of a welding group out of all of it” (RC012 2008).

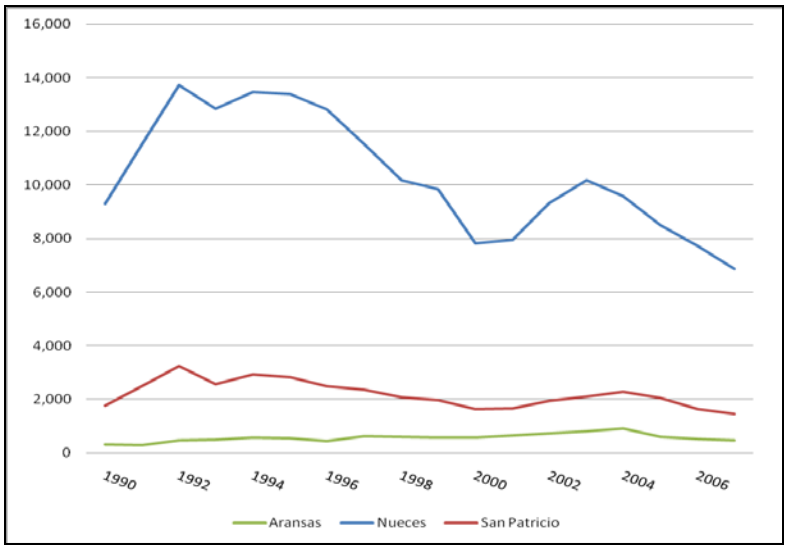

Figure 7.10. Total number unemployed in Aransas, Nueces, and San Patricio counties.

Source: U.S. Dept. of Labor, Bureau of Labor Statistics, Local Area Unemployment Statistics.

7.5.2.1. The Shipbuilding and Fabrication Workforce

So many laborers in the area moved into fabrication and shipbuilding that employment in the fabrication yards rivaled that of Corpus Christi’s oil refining complex, which traditionally boasted the largest numbers. In 1978, some 2,500 laborers manned the refineries, while more than 2,000 fabricators built offshore drilling platforms, processing units, and other equipment. Baker Marine alone employed over 800 workers at its Ingleside and Rincon Canal yards. Another 400 laborers worked at Berry Contracting’s fabrication yard near Corpus (The Port Commission of the Port of Corpus Christi 1978). To assure an adequate supply of skilled personnel, companies like Brown & Root operated training programs at Corpus Christi with the cooperation of nearby Del Mar College and other institutes. Welders, fitters, and other workers usually received onsite training at the port or at the Ingleside shipyard (The Port Commission of the Port of Corpus Christi 1974). Although some companies that located in the central Coastal Bend intended to bring employees from Louisiana, a Corpus Christi fabricator recalled that even in the 1980s, “It was hard as hell getting them to come, [to] move to Texas” (Rodrigue 2009). Throughout fieldwork for this study, corporate leaders continued to consider Louisiana as a source of workers for the region’s fabrication industry. In 2006, when Gulf Island Fabricators bought Gulf Marine Fabricators, the Gulf Island chairman and CEO argued that it would attempt to increase Gulf Marine’s profitability by bringing in skills and technology from Gulf Island’s facilities in Louisiana (Chirinos 2006). However, actually getting Louisiana workers to move proved to be an ongoing challenge.

Despite efforts to increase the local workforce, manufacturing employment in the central Coastal Bend has remained the same in absolute numbers since the 1970s and, due to overall population and job growth, the sector's share of total employment has shrunk to just over 6%. Nevertheless, shipbuilding and fabrication remain important contributors to the region's economy. Manufacturing income grew 248.6% in the 1970s, 30.2% in the 1980s, 51.1% in the 1990s, and 37.5% from 2000 to 2006. Thus, while manufacturing employment is in decline, manufacturing income continues to increase. Likewise, nominal wages based on total personal income have steadily increased over the past forty years, so that, on average, workers receive relatively good nominal wages.[29] Some of the increase is associated with fact that, following regional trends, companies have moved many jobs requiring large numbers of unskilled workers to counties with lower labor costs. Still, real wages have been relatively stable and have increased slightly since the 1970s. As a result, there has been modest growth in real average wages per job and slow real growth in personal income, though there was a notable decline in the personal income during the 1980s.

When the research team conducted fieldwork for this study, central Coastal Bend fabricators and shipbuilders were offering a range of jobs and occupational choices. Port authorities classified most workers as highly skilled craftsmen and reported that many came from the local labor pool. Moreover, even though the overall demand for workers was lower than it had been at the industry's height, employers argued that they still faced challenges attracting workers. To meet labor needs, they had developed various training partnerships and other strategies (see Section 7.5.4.3 below).

The research team found that manufacturing and fabrication had a detectable impact on current personnel transfers, such as retirement benefits, food stamp benefits, and unemployment insurance benefits. The positive impact of manufacturing on retirement transfers may be the result of the higher wages in the manufacturing sector. It is noteworthy, however, that Medicaid transfers were not affected in a statistically significant way and that only the change in the overall earnings per job significantly impacted the food stamp transfers. Given evidence reported earlier regarding the higher pay for manufacturing jobs, one would expect the loss of those jobs to hit the study community's food stamp transfers over the long-run. Unemployment insurance benefits had a statistically significant short-term relationship with manufacturing employment. This is likely due to the brief coverage of unemployment benefits until recently. It also suggests that, while the percentage of workers in manufacturing has fallen, the impact of a decline in employment in this sector has a substantial short-term effect on this region.

7.5.2.2. Alternatives for Skilled Workers

Refineries are major competitors for workers with the skills needed by the area's fabricators. Some locals preferred jobs at refineries to fabrication jobs because the pay rate is higher, although residents of other areas consider refinery work more permanent (see Chapter 6 this volume). Many of the region's refinery-related jobs provide the short-term work associated with turnarounds, and the workers are often brought in specifically to accomplish the turnaround and then leave. Several study participants expressed frustration with workers sacrificing stability to follow a minimal increase in wage rate (RC033 2008; RC036 2008). However, others reported

[29] Nominal wages are the wages paid in current dollars unadjusted for inflation, whereas real wages are wages measured in constant dollars adjusted for the effects of inflation. Inflation is typically defined as a rise in the general price level of a typical market basket of goods and services.

that the fabrication industry had adjusted to workers taking off during slow times to work at refinery turnarounds or for a few months to make extra money (RC015 2008; RC016 2008). Some noted it would be beneficial if turnarounds at the different refineries could be coordinated to provide more steady employment for the workers, but overt coordination of activity would be seen as collusion, which is prohibited. Refinery jobs often require National Center for Construction Education and Research (NCCER) certification and English language proficiency, so they are unavailable to monolingual Spanish workers (RC015 2008).

Employers and workers are also part of a larger fabrication- and petroleum-industry network. Although the central Coastal Bend does not support the high level of petroleum-related companies exhibited by other study areas, Halliburton has offices in Corpus Christi and hires craft workers for onshore work in the oilfields near Alice, TX. Many workers have spent at least part of their lives elsewhere along the Gulf Coast. After Hurricane Katrina and Hurricane Rita in 2005, Coastal Bend employers complained of having been drained of workers because so many left to do clean up in New Orleans or repairs offshore (RC046 2008). In fabrication and shipbuilding, wages tended to trend higher as one moved east around the Gulf Coast, with the lowest wages in Brownsville. Thus, even without the specific post-2005 pull from New Orleans, some workers in the Coastal Bend saw themselves in transition toward higher-paying jobs to the east; several welders who participated in conversations in Ingleside early in fieldwork for this study later contacted researchers from Houma (RC002 2008).

In addition to the demands from the petroleum industry, a 100,000 square foot cold storage facility in the Joe Fulton area of the Port of Corpus Christi was completed in 2009 and was expected to generate a substantial number of jobs. The potential loss of 7,000 jobs from the naval station's closure was not connected to labor demand in the region, because it was anticipated that many people associated with the base would leave the area or would have reached retirement age.

The port itself employs many individuals, both full-time workers and locals who worked part-time to supplement their income (The Port Commission of the Port of Corpus Christi 1980-81). Port employees experienced dramatically changed working conditions after the September 11, 2001 terrorist attacks. The Maritime Transportation Security Transportation Act of 2002 authorized the Department of Homeland Security to issue national ID cards for port employees and transportation worker identification credentials to control access to restricted areas, such as refineries, ports, and ships. The Department of Homeland Security also demanded background investigations of employees. The new requirements adversely affected undocumented workers and people convicted of certain crimes[30] (The Corpus Christi Caller-Times 2006b). The Port of Corpus Christi was the second port in the country and the first on the Gulf Coast to enroll in the workers identification program. Lockheed Martin won the contract to enroll longshoremen, truckers, and refinery workers, and port workers then had to undergo extensive background checks, fingerprinting, and verification of documents. The spokeswoman for the transportation administration said, "Our goal isn't to put people out of work, but to provide security at work" (The Corpus Christi Caller-Times 2007c).

[30] The Department of Homeland Security established a list of felony offenses which are Permanent Disqualifying Offenses and range from espionage to murder (Transportation Safety Administration n.d.).

7.5.2.3. Finding Out About Work

The fabrication and shipbuilding industry is not as extensive in the central Coastal Bend as it is in some of the other study areas, but many workers, even those from outside the area, reported finding jobs through family, friends, and existing and former employee contacts. Likewise, employers use their social networks to find workers. Employers recruit from south, south central, and east Texas, citing cities such as Brownsville, Austin, and Conroe as well as rural agricultural communities. Due to connections in southern Louisiana, many employers also recruit from communities there. Turnover is high for some employers, but others argued that they reduced turnover by paying greater attention to initial employment screening (RC046 2008). Companies also maintained walk-in lists and participated in career fairs and other events in an effort to find local workers.

One large yard maintained a billboard in a prominent position, advertising that they were continually hiring. At times, smaller yards would set out nylon "Now hiring 6GR Welders" signs. Job openings were very rarely publicized in the local newspapers and the yards' relationships with employment offices have waxed and waned, demonstrating the industry's emphasis on social networks for hiring skilled craft labor.

7.5.2.4. Establishing and Maintaining a Workforce

Community leaders and employers expressed a preference for seeing local workers hired at the industrial facilities within the region, when those individuals had the skills and motivation to perform well on the job (RC003 2008). They argued that the shortage of skilled and semi-skilled labor in the region could be attributed to the "policy" since the 1950s of encouraging high school students to attend college rather than train for typically higher-paid, blue collar jobs (RC052 2008). Other factors creating the labor shortage, in their view, were failure to pass drug screenings; elevated high school dropout rates; the enduring labor-pool impacts of the 2005 storms; an "extreme brain-drain" of more educated younger adults from the region; wage competition from other locations along the Gulf Coast; and an aging workforce (RC003 2008; RC036 2008). However, other community leaders and employers noted that both refineries and fabricators contributed to negative perceptions of work at their facilities due to employment instability, due to frequent turnarounds at refineries and due to the uneven flow of projects to fabrication yards.

Certainly, educational attainment has increased throughout the region. The number of people who had not graduated from high school decreased 20% from 53% of the population in 1970 to an estimated 23.4% in 2007, while the number of people with college degrees or higher credentials increased 251% from 9.7% of the population to an estimated 18.8% in 2007. Yet, despite these positive changes, the proportion of people with at least a high school diploma and the proportion of people with at least a bachelor's degree in the Corpus Christi MSA trail state and national averages. In addition, the levels of educational attainment among the communities in the Central Bend are substantially different. Ingleside and Aransas Pass have the smallest proportions of people with college degrees; Port Aransas, Portland, and Rockport have the highest.

Most study participants agreed that the fabrication yards could take on additional projects if they could find sufficient labor. Because of the greater level of industry activity in southern Louisiana, it has been and continues to be recognized as the source of skilled labor, despite challenges in getting workers to relocate. Still, some southern Louisiana laborers originally came

from elsewhere and would move again. As one industry executive noted, "Our general welding superintendent, a guy named […], is a naturalized American citizen from Guadalajara, but he came from Louisiana. We picked him up because he worked on Cognac" (Rodrigue 2009).

One yard established an interim fabrication site in Refugio, Texas to tap into an apparently abundant supply of welders in and around Victoria said to be willing to travel to Refugio, but not all the way to Ingleside. Several companies subsequently turned to workers on temporary H-2B visas (see Section 7.5.2.5. and Chapter 2, Volume III).

Study participants noted that workers were able to achieve success through both special training courses and on-the-job training (see Chapter 4, Volume III). Several training centers operated in the central Coastal Bend when the research team conducted fieldwork, and area high schools had also begun to revitalize technical and industry-specific skills training. Renewed interest in strengthening local industrial training and vocational programs was a frequent topic of discussion among study participants who argued that such training is beneficial to the community and paramount to future growth.[31] The Craft Training Center of the Coastal Bend in Corpus Christi, financed and run by area contractors and owners of industrial facilities, offers NCCER-certified training. Organized in 1987 as the ABC Merit Shop Training Program[32] in an attempt to meet labor shortages, the program was expanded in 1997 to address the shortage of skilled craft workers throughout the construction trades (Craft Training Center of the Coastal Bend 2009). The Center retains its connection to the ABC; those on the Board of Directors must be either ABC members or company owners (RC024 2008). The 2009 Board included representatives from several area refineries and one fabricator (Craft Training Center of the Coastal Bend 2009). The center is a Workforce Investment Act (WIA) authorized provider (see Chapter 5, Volume III) and has been working with the area chambers of commerce and high schools to revamp industrial training. It hosts an annual high school welding contest each spring. Training offered at the center tends to focus on skill sets required by the refineries, but the work with area high schools, especially plans to revamp programs in Ingleside, points to the staff's cognizance of the fabrication industry's specialized needs. Prior to this study's fieldwork period, the center's staff had helped write significant training grants, made available through the Texas Workforce Commission's Skills Development Fund, for both Kiewit and Gulf Marine/Gulf Island Fabricators (SE008 2007).

Labor unions have not had a sustained presence in any of the Coastal Bend's refineries or fabrication yards. At one point, when the Baker Marine yard was owned by IHC Holland, it was unionized, but the union was quickly disbanded. Consequently, the region has not had a history of union training programs.

Del Mar College offers courses, certificates, and degrees in metal fabrication and welding. Like technical training programs at other community colleges, those at Del Mar must compete for resources with academic programs. A challenge for all training programs is to attract and retain craft instructors, who, with jobs plentiful, can make much more money working than

[31] Even with the economic downturn at the end of 2000-2010, workforce development personnel argued that skilled welders and fitters could find work in many of the study communities.

[32] Associated Builders and Contractors, Inc. (ABC) is a 501C6 construction industry association for contractors, suppliers, and service firms. The Texas Coastal Bend Chapter was chartered in 1982 to focus on legislative action, labor relations, educational and safety programs, fringe benefits, and mutual member assistance. Its merit shop program was developed as a challenge to union training programs and the ABC chapter promotes it to employers who believe in "the free enterprise system, the right to run your own business free from outside interference, rewards based on merit and freedom to compete for the work you want" (Associated Builders and Contractors, Inc. 2011).

teaching. Some instructors noted that they enjoyed teaching, but had to work part-time in industry jobs to pay their bills (RC066 2008).

All the training programs focus primarily on the basics of welding. However, other areas of training for which industry and education administrators see a need are instrumentation and process technology, both skills needed for jobs in refineries rather than on fabrication yards. One study participant suggested that refineries, which participate in some of the federally-funded training programs, would "almost prefer student welders," people they can train from scratch themselves, to meet their particular job and equipment needs (SE006 2007). Ingleside High School teaches flux core welding very early in its training, because the fabrication industry primarily uses flux core and because the companies often donate rolls of flux core.

Each of the region's two large yards also has its own training facilities. A welder helper may enroll in training to become a welder at the training facility and consequently receive higher pay. In some cases, study participants emphasized that they, too, would rather train their own than hire someone with a lot of "in-class" time, certifications, and engrained techniques (RC005 2008). Discussions of future uses for the naval base have included a training center to help respond to critical workforce issues (RC022 2008).

Some workers and other central Coastal Bend residents expressed concern about some of the arduous tasks performed by workers in close quarters without good ventilation or outside in high temperatures, and about dangerous jobs that workers performed without masks, gloves, or other protective gear (RC004 2008). Before 1980, worker exposure to asbestos at shipyards was a concern, because the protective clothing worn by welders, as well as the welding bars they used, contained asbestos (Mesothelioma Center 2009).

7.5.2.5. Temporary Workers

Throughout the years, a significant number of international immigrants have arrived in the central Coastal Bend without official documentation, some staying and becoming part of the region's population and others moving on. Some of these undocumented workers have been employed in fabrication and shipyards, but it is impossible to determine how many individuals fall into this category. More recently, however, employers have sought to hire workers using temporary H-2B visas (see also Chapter 2, Volume III). Table 7.2 shows the number of H-2B visas that were requested and certified to employers requesting workers in the central Coastal Bend during 2000-2010, clearly indicating that the number of requests was significantly higher than the number certified. Table 7.3 shows the locations and job titles for visas certified to companies specializing in welding and other fabrication-related jobs, as well as those for which the requests were denied. The first year that any companies were certified to receive H-2B visas for fabrication-related work in the region was 2004. As shown, even though employers in other industries, such as fishing, restaurants, and meat packing (included in the "other" category), requested and were certified to receive workers, the rapid increase in requests by area fabricators after 2005 was striking. The rapid decline in certifications has been attributed to a concerted effort by State Workforce Agencies to document that workers are available to fill the positions for which temporary visas were being requested (see Chapter 2, Volume III).

Table 7.2.

H-2B Visa Request/Certifications for the Central Coastal Bend Region, 2000-2009*

Year	Construction	Fabrication	Fishing	Hospitality	Other	Timber
1999	0/0	0/0	0/0	0/0	0/0	0/0
2000	36/36	0/0	24/24	0/0	0/0	0/0
2001	53/53	0/0	2/2	0/0	300/300	0/0
2002	0/0	0/0	0/0	2/2	194/194	0/0
2003	0/0	0/0	0/0	0/0	0/0	0/0
2004	0/0	0/0	0/0	460/460	0/0	2/2
2005	100/100	0/0	0/0	95/80	0/0	0/0
2006	100/200	250/250	0/0	80/93	100/100	0/0
2007	334/340	746/1000	5/5	45/56	0/0	0/0
2008	10/10	296/920	8/8	42/43	0/0	0/0
2009	18/20	0/95	0/0	1/1	0/0	0/0
2010	0/0	0/0	0/0	0/0	0/0	0/0

*Includes Aransas Pass, Corpus Christi, Fulton, Ingleside, Port Aransas, Portland, and Rockport

Source: U.S. Department of Labor 2011

Note: Construction includes construction worker; fabrication includes all types of welders, pipe fitters, metal fabricators (see Table 7.3 below); fishing includes fisher, shellfish shucker, deckhand fishing vessel, and such; hospitality industry, for restaurants and hotels, includes kitchen helper, food assembler, housekeeper, and such); timber includes forest workers, tree planters, and such; and other includes everything else.

Table 7.3.

H-2B Visas Certified in Welding and Fabrication-Related Jobs in the Costal Bend, 2006-2009

Year	City	Job Type	Number Certified	Number Denied
2006	Corpus Christi	Combination Welder	50	0
2006	Corpus Christi	Welder, Gun	50	0
2006	Ingleside	Welder Fitter	150	0
2007	Aransas Pass	Welder Fitter	123	2
2007	Aransas Pass	Combination Welder	200	0
2007	Corpus Christi	Metal Fabricator	100	0
2007	Ingleside	Pipe Fitter	148	2
2007	Ingleside	Welder Fitter	175	0
2007	Ingleside	Welder Helper	0	200
2007	Nueces	Metal Fabricator	0	50
2008	Aransas Pass	Metal Fabricator	296	4
2008	Corpus Christi	Metal Fabricator	0	200
2008	Ingleside	Pipe Fitter	0	185
2008	Ingleside	Welder Fitter	0	235
2009	Corpus Christi	Metal Products Fabricator Assembler	0	95

Source: U.S. Department of Labor 2011.

7.5.3. Impact of the Hurricanes (2005 and 2008)

As noted earlier, the central Coastal Bend was not directly affected by the hurricanes of 2005 or 2008, although the impacts of reduced labor availability were felt after both storms as workers relocated to areas with high demand and higher wages. Nevertheless, several offshore servicing companies and contractors located new offices in the region following the 2005 hurricanes, reportedly to supplement their home offices, located primarily in Houma, Louisiana, where the storms caused major damage and disruption (see Chapter 4 in this volume). It is unclear whether the relocation will be permanent. One company that opened an office in Ingleside following Hurricane Rita and Hurricane Katrina closed in January 2009, moving company employees to Houma.

7.6. DISCUSSION

The central Coastal Bend region has been involved with the petroleum industry for more than a century, beginning with the first gas well at the White Point field in 1905. The industry moved offshore in the 1950s; the first deep sea, mobile, offshore platform went to work off Port Aransas in 1956. Yet, the region has not been central to the offshore petroleum industry's development along the Gulf of Mexico and never developed into an offshore industry or shipbuilding or fabrication "hub." Its focus has been and remains downstream refining, rather than exploration and production. The major exception has been the establishment of a robust core of fabrication

yards, located in the region to take advantage of the deepwater channel leading to the Port of Corpus Christi.

The existence of the port, itself, is owed to oil interests that played a key role in securing federal funding for the port's construction in the 1920s, and petroleum still accounts for the bulk of shipments received there. Refineries and petrochemical plants dominate the area around the port, and continue to generate the greatest proportion of its revenues, though the shipments involve mostly foreign oil for refining or the petrochemical industry and petrochemical products being sent out into the market. The many ties to the petroleum industry have meant that the region has been affected by the industry cycles; the 1980s downturn created major challenges for the region and its people.

Large-scale shipbuilding has a much shorter history in the area: it did not begin until World War II. Yet, despite the continued presence of a small shipbuilding industry, the fabrication and final assembly of structures for the offshore petroleum industry dominate maritime construction in the region. As offshore equipment became larger, Corpus Christi, as a deepwater port, became increasingly attractive for assembly and launching giant offshore equipment and two industry leaders began operations in the area in the 1970s. Though neither remained active in the area at the time of this study, their earlier presence and the development of infrastructure had attracted others to the area. During this study, two large fabricators dominated the local industry, with several smaller companies operating alongside them. Nevertheless, relatively fewer people were working in the shipbuilding or manufacturing sector of the economy than in the past, although their nominal wages had increased.

Due to its limited role in the Gulf Coast industry or the Texas economy, the central Coastal Bend fabrication industry has had limited political influence. As one industry executive noted, because of Texas' more diversified economy, "going to Austin to get something done for us is a little different than a McDermott or Chouest or Bollinger going to the [Louisiana] governor. They have a lot of clout. They've always been strong politically, and I think in the right way... In my early days here, it was always a battle. Some of the jobs were battles, Texas against Louisiana. I specifically remember one we lost because we weren't in Louisiana. We were in Texas" (Rodrigue 2009).

Nevertheless, the central Coastal Bend fabrication industry has persisted for nearly 40 years and is recognized as a significant economic force in the region, even though the number of jobs created accounts for a smaller percentage of total employment than it did at the industry's height. Despite the challenges, fabricators who relocated to Texas argued that the deepwater port and the availability of large stretches of undeveloped land were significant factors in their decision to begin operations in the central Coastal Bend. Ancillary and marine service companies have also located in Texas, especially after the 2005 hurricanes, because they have been able to set up and send workers offshore more easily than from Louisiana.

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8. BROWNSVILLE-PORT ISABEL

8.1. INTRODUCTION

Due to proximity to inland waterways and the Gulf of Mexico, both Brownsville and Port Isabel have long served as key ports and sites of access to the regions that today are divided by the international border separating the United States from Mexico (Figure 8.1).

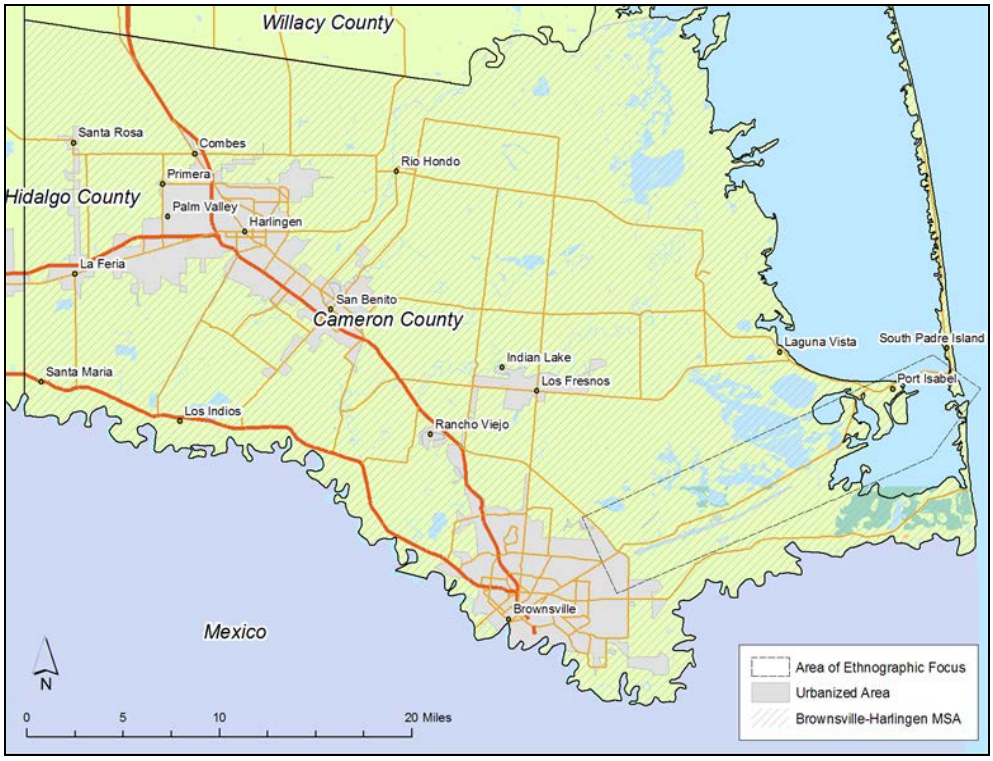

Figure 8.1. The South Texas coastal region.

Map was created in 2011 using data packages included with the ArcGIS software suite. Sources used to create these data layers included: ArcWorld/ESRI, National Atlas of the United States, Tele Atlas, U.S. Bureau of Transportation Statistics, U.S. Census, and U.S. Geological Survey.

The first Spanish explorers to visit what is now "deep South Texas" or the Rio Grande Valley, as it is commonly called, arrived during the 16th century. In the early-1500s, the Spaniard Alonso Alvarez de Pineda explored a river that for a long time scholars believed to be the Rio Grande (its name in the United States) or the Rio Bravo (its name in Mexico). Although some evidence suggests that de Pineda actually explored the Rio Pánuco, south of the Rio Grande near the present-day Port of Tampico (Tamaulipas), many scholars still credit de Pineda for his early exploration of the river he called "El Rio de las Palmas." After Pineda, others followed with limited success (Chilton 1997). Alvar Nuñez Cabeza de Vaca accidently explored the area now part of the Rio Grande Valley when he was shipwrecked off the coast of present-day Galveston. He crossed through present-day Roma, Texas in the greater or upper Valley area (Weber 1994). Brazos Santiago Pass in the tip of present-day Texas was named in 1523 by the governor of Jamaica, Francisco Garay (Weber 1994).

In 1828, Rafael García was granted the "Potrero de Santa Isabel" (Garza and Long 2009). The small community that developed there in the 1830s became known as "El Frontón de Santa Isabel." Later, the name was changed to "Punta de Santa Isabel" and then Point and Port Isabel. When Texas declared its independence from Mexico in 1835, it claimed the Rio Grande River as its western boundary, so everything north and east of the river, including Port Isabel, became part of Texas. A post office was established and given the name Point Isabel in June 1845. The town served as a military supply center during the Mexican-American War of 1846, and the Treaty of Guadalupe Hidalgo, ending that war, ceded Port Isabel, along with the rest of Texas, to the United States. By the late-18th century, the town had become a popular Mexican resort. The Port Isabel Light House was built in 1852 and, by 1859, Port Isabel was exporting $10 million of cotton annually (Port Isabel Chamber of Commerce 1962).

Leading up to the Mexican-American War, General Zachary Taylor established Fort Brown 16 miles southeast of Port Isabel at the site of present-day Brownsville and across the Rio Grande River from Matamoros, Tamaulipas, Mexico. Matamoros had been founded in the 1790s, after the settlement of the 14 villas of Nuevo Santander, and was first named "Refugio" in 1793 before becoming Matamoros in 1826. Brazos Santiago Pass into Laguna Madre Bay once provided the only access to a protected harbor along a 400-mile stretch of the Gulf between Tampico and Corpus Christi. The proximity of the Rio Grande/Rio Bravo River afforded possibilities for travel and trade into the region's interior. Matamoros was declared an official port of entry after Mexican Independence, but the sand bar at the mouth of Brazos Santiago limited port traffic to small vessels.

The City of Brownsville, founded at the end of the Mexican-American War, was incorporated in 1853. The early economy of the city's surrounding region was based largely on commerce: goods were shipped to Brownsville and then smuggled across the border to avoid high Mexican duties. The Rio Grande Valley Railway, completed in 1852 as the region's first railway, connected Port Isabel with Brownsville. Over the next several decades, Brownsville witnessed a commercial boom that would define its position in Texas as a dynamic international port of entry. Today, the city remains an important center for technology, industry, and trade.

8.1.1. General Description

Brownsville, the southernmost city in Texas, is the county seat of Cameron County. Cameron County includes the cities of Harlingen, San Benito, Port Isabel, and South Padre Island, and is designated as a "workforce development area." The region is defined by its relative position: to other parts of Texas—thus it is "deep South Texas"; to Mexico—as a twin city to Matamoros, Tamaulipas; and to the Gulf of Mexico—as a large port and maritime industrial area. The region is separated geographically from the rest of Texas by extensive ranchlands, notably the Kenedy and King Ranches, which extend nearly 160 miles to Corpus Christi. Besides Brownsville, both Harlingen and McAllen, in Hidalgo County, have significant post-secondary education centers and retail areas. South Padre Island, popular among college-age "spring breakers" and Mexican tourists, is located about 25 miles from Brownsville and six miles from Port Isabel.

This region cannot be understood without a comprehensive understanding of the border and the Matamoros area. Four international bridges connect Brownsville and Matamoros. Many residents, Mexican and American, frequently cross the border for commerce, employment, and social activities. Workers cross the border daily, in both directions, to work in a range of occupations, from retail to heavy industry. Trade and commerce in Brownsville and Matamoros are intertwined. Specifically, Mexicans from throughout northeastern Mexico shop in

Brownsville, Mercedes (where there is outlet shopping), McAllen, and Harlingen. Residents of Matamoros may also cross the border daily to work or attend school. Residents of Brownsville and other parts of South Texas regularly cross into Mexico to shop, work, and visit family and friends. By the 1980s, Cameron County ranked nationally as a desirable retirement location, and it continues to be a tourist destination for residents from both countries.

The urban areas of Brownsville and Matamoros anchor this region. According to the Mexican Census, in 2005 Matamoros had 422,711 residents (Instituto Nacional de Estadística y Geografía 2005). Based on U.S. Census data, Brownsville's population at the time was 164,157, Harlingen's was 61,823, and San Benito's 24,520, while South Padre Island had 2,551 residents and Port Isabel 5,265 (U.S. Census Bureau, American Fact Finder 2009).

The border, in many respects, has become more visible in recent years. The U.S.-Mexico border fence was being built, protested, and contested in court when fieldwork for this study was underway. In addition to activity at the ports of entry, the U.S. Department of Homeland Security monitors the border along the Rio Grande River levee with all-terrain vehicles, pick-up trucks, and horses. Increased surveillance and monitoring activities at the border have raised concern among local business and civic leaders about their impacts on local economies (Taylor 2007).

8.1.2. Principal Ports and Key Infrastructure

This region is served by three ports, industrial parks, highways, rivers and canals, and the Brownsville-South Padre Island International Airport (Figure 8.2). The Matamoros International Airport, across the border in Mexico, provides passenger and cargo service, handling both imports and exports. The three ports—Brownsville, Harlingen, and, Port Isabel—serve distinct clienteles and handle a variety of cargo, including petroleum products, lubricants, concrete, iron ore and steel products, shrimp, fertilizer, grain, raw sugar and cotton, and other bagged or bailed goods.

The region's principal ship channels are the Brownsville Ship Channel, which offers virtually straight 17-mile passage from the port to the Gulf of Mexico, and the Intracoastal Waterway. Ocean vessels, U.S. and Mexican truck transport, as well as rail, barge and air service, facilitate the movement of goods into and out of the region. The Brownsville Ship Channel is just three miles from the Mexican border, making it readily accessible for transborder transport, and it has no bridges or other obstructions along its entire length. The Intracoastal Waterway system extends 426 miles along the Texas coast, from Sabine Pass to the mouth of the Brownsville Ship Channel at Port Isabel, and links area fabrication and shipbuilding yards to other principal transportation corridors, such as the Houston Ship Channel and the Mississippi River.

8.1.2.1. Port of Brownsville

The Brownsville Navigation District was established in 1927. With funds made available by the Roosevelt administration in the 1930s to stimulate economically-troubled areas, the Brownsville Ship Channel was dredged to 25 feet from the Gulf of Mexico, port facilities were built, and jetties were constructed at Brazos Santiago Pass. Subsequent dredging efforts deepened the channel to 36 feet and then, in the 1990s, the depth of the entrance channel was increased to 44 feet and the main channel up into the Port of Brownsville to 42 feet.

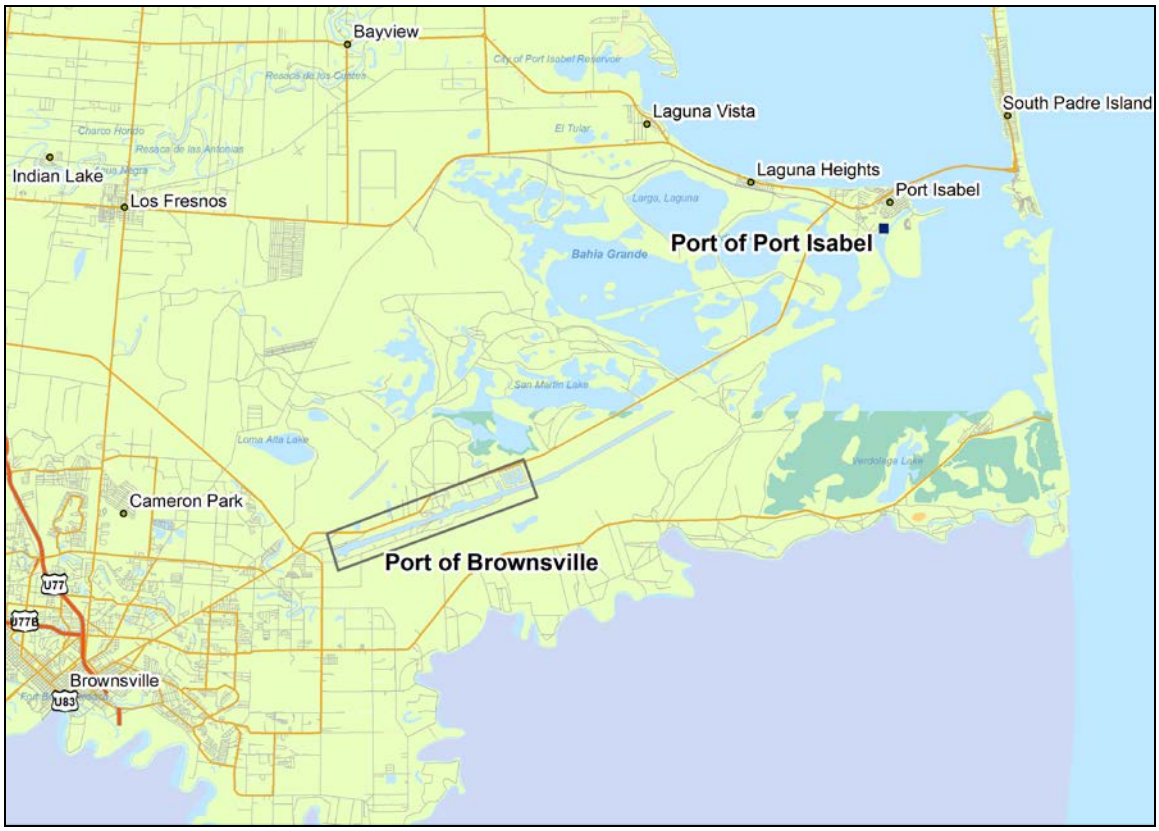

Figure 8.2. Ports of Brownsville and Port Isabel.

Map was created in 2011 using data packages included with the ArcGIS software suite. Sources used to create these data layers included: ArcWorld/ESRI, National Atlas of the United States, Tele Atlas, U.S. Bureau of Transportation Statistics, U.S. Census, and U.S. Geological Survey.

The Port of Brownsville, a central feature of the Brownsville Navigation District, aims to be a leader in business growth and development by providing state-of-the-art transportation facilities and infrastructure, developing economic opportunities, and exhibiting high standards of public administration. The port's ultimate goal is to improve the quality of life and create employment opportunities in the region it serves. Located three miles from the Rio Grande, several miles east of Brownsville and seven miles from the railroad, the port connects with the Gulf of Mexico through Brazos Santiago Pass and handles over five million tons of cargo annually (Florey 1995). In addition to piers, wharfs, and some 10 cargo docks, four oil docks, and a bulk cargo dock serving the grain elevator and the bulk plant, the port maintains the 3,500 foot Brownsville turning basin. The fishing harbor, four miles down the channel, provides dock space and support facilities for a portion of the region's remaining shrimp fleet. Transportation to and from the port occurs via ocean vessels, U.S. and Mexican truck and rail transport, barge service along the Intracoastal Waterway, and air service from the Brownsville/South Padre Island Airport. Access to the Missouri Pacific Railroad, the Southern Pacific Transportation Company, and the National Railways of Mexico facilitate the movement of goods in and out of the port (Garza and Long 2009).

According to a study conducted by the University of Texas at Brownsville (UTB) Business Administration Graduate Program in 1990, the port employed 2,802 individuals, and generated $44 million in "personal income, more than $180 million in sales, and over $2.9 million dollars

in tax revenues" (Florey 1995). Importers and exporters who participated in the study reported that the Port of Brownsville was "efficient and economical and the port serves lines that are among the finest in the world" (Florey 1995). At that time, over 200 companies at the port were involved in the "construction of offshore drilling rigs, ship dismantling, steel fabrication, boat construction, rail car rehabilitation, paper bag manufacturing, asphalt handling, petroleum storage, waste oil recovery, bulk terminaling for miscellaneous liquids, grain handling and storage" (Florey 1995).

An economic impact study prepared for the port in 2006 by Martin Associates counted around 230 companies doing business at the port, including direct, induced, and indirect services, while around 170 businesses were operating on port property as lessees (Martin Associates n.d.). Activities at that time included offshore drilling rig construction; ship dismantling; steel fabrication; LPG storage and distribution; waste oil recovery; bulk terminaling for petroleum and other liquids; and grain handling and storage. Ship dismantling, which generated $65 million in 2005, was by far the port's single largest revenue stream. The leading job-producing activities were shipyard/oil rig repair operations (2,024), ship breaking (543), terminal employees (285), and truck transportation (280). In addition, the Martin Associates report noted that 1,103 jobs were created by "real estate tenants" at the turning basin and the fishing harbor, some of which were working directly with industrial and manufacturing tenants, including businesses manufacturing components for AmFELS.

The Port of Brownsville, along with the Port of Tampico, service the raw product import and finished product export needs of the major industrial center of Monterrey, as well as "maquiladoras" along the border and inland. For example, to furnish Monterrey's manufacturing facilities, steel comes through Brownsville from Brazil, the United States, the United Kingdom, and Honduras, and goes to Mexican smelting plants. Some of this steel is generated at the port itself through the shipbreaking and scrapping activities there. Due to a waiver, trucks at the Port of Brownsville can load to Mexican weight limits, which are higher than those of the United States (Nodar 2009).

8.1.2.2. Port Isabel-San Benito Navigation District

Situated at the juncture of the Intracoastal Waterway and the Brazos Island Harbor Channel, the Port of Port Isabel has been governed by the Port Isabel-San Benito Navigation District since its establishment in 1929 (Port of Port Isabel n.d.). The port dates to the Rivers and Harbors Act of 1930, authorizing the Brazos Island channel to a dredged depth of 12 feet and a width of 125 feet. The Port of Port Isabel has a deepwater harbor, with 1,150 feet of docks and 2,100 feet of deepwater frontage. The port's property also includes warehouses, packing/canning operations, recreational boat launches and marinas, and a commercial fishing marina once utilized by Port Isabel's now largely defunct shrimping fleet. The fleet, once the largest along the Gulf, declined throughout the late 1990s and early 21st century as a result of rising fuel prices, lower product prices due in part to increases in foreign imports, and, according to some observers, increasingly hostile public opinion. In the 1950s and 1960s, however, the port boasted 10 large processing plants along the industrial channel. It also had large freezing plants to conserve the shrimp before it was transported to freezing storage centers in nearby Harlingen and Brownsville.

By the 1950s and 1960s, the port had largely become an "oil port," with a chemical refinery, a pipeline service company, and shipyards, as well as a frozen-food company. After the refinery closed in the late 1950s, crude continued to come through the port in pipes and was then barged to refineries in Corpus Christi. In 1978, the ship channel was dredged deeper, to 36 feet, and Port

Isabel's turning basin was dredged to a similar depth. In 1978, the old Queen Isabella Causeway out to South Padre Island was replaced.

By the end of the 20th century, the port had leased land and docks for a variety of uses, such as a floating barge hotel that made runs up and down the Intracoastal with "winter Texans" and a roll-on/roll-off terminal facility doing trade with Honduras and Nicaragua. At the time of fieldwork for this study, the port was gearing up to provide support for offshore oil exploration and the Padre Island Gas Field. Following drilling by the Hess Corporation on several leases on the Jack Hays prospect in the far western Gulf of Mexico and Shell's investment in the Great White prospect, Halliburton began making plans for a mud and completion facility at the port, Total began discussions in relation to Perdido Hub, and Seacor Marine and other operations expressed interest in port property (SF007 2007). Speculation circulated that the Port of Port Isabel would play a major role in development of the western Gulf, and might also play a service and support role for Mexico's offshore expansion of activities in the Perdido Fold (sub-salt in 9,000 feet of water), especially in the wake of the devastation caused by the 2005 hurricanes (Del Valle 2009). The speculation was not borne out during the fieldwork period, because the challenges of accessing the port by land and decisions to consolidate investments in southern Louisiana resulted in withdrawal of offshore petroleum-related attention from the port. Subsea 7 and several tank facilities were the primary tenants in 2009.

8.1.2.3. Port of Harlingen

The Port of Harlingen, managed by the Port of Harlingen Authority, has wharf and dock facilities and seeks to play a role in the development of waterborne commerce, promoting economic growth, creating jobs, and improving the quality of life in the district and the Rio Grande Valley. The Harlingen channel is maintained to a width of 125 feet and a depth of 12 feet and receives water from the Arroyo Colorado, a fresh water river. The port exports 100% of the sugar produced in the Rio Grande Valley and imports 90% of the fertilizer used by south Texas farmers and 70% of the refined petroleum for south Texas (Port of Harlingen n.d.).

8.1.3. Current Industrial Profile

Using the characterization of yards based on company ownership that was developed for this study and described in Chapter 1 of this volume, this area has only one yard that services or fabricate rigs, platforms and vessels, and numerous small specialty shops (Figure 8.3). It also has four shipbreakers (indicated, along with several unidentified yards as "other" on the map). Although the Brownsville and Port Isabel area's fabrication, shipbuilding, and shipbreaking industry is of more recent origin than the industry in other communities profiled in this study, the circumstances affecting the industry's operation in the region today reach back over 100 years. Therefore, the next section takes a careful look at the history and evolution of the region, as well as at the fabrication and shipbuilding industry's establishment there, in order to establish a context for the subsequent sections' descriptions of the local industry and communities affected by it today.

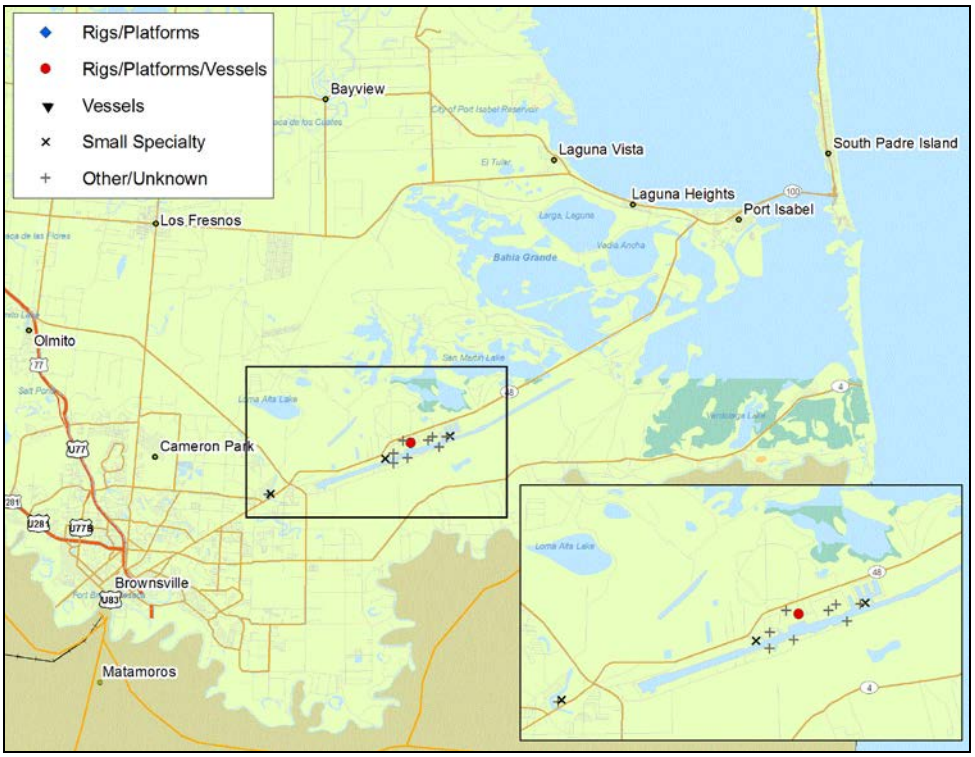

Figure 8.3. Fabrication and shipyards in the South Texas study area.

Map was created in 2011 using data packages included with the ArcGIS software suite. Sources used to create these data layers included: ArcWorld/ESRI, National Atlas of the United States, Tele Atlas, U.S. Bureau of Transportation Statistics, U.S. Census, and U.S. Geological Survey. Additional shipyard data assembled by Rebecca Crosthwait, 2008-2010, from multiple sources, primarily company websites, business directories, and ethnographic data collection.

8.2. HISTORY

The steamboat era, lasting from the end of the Mexican-American War in 1846 to the late-19th century, introduced the Brownsville-Matamoros region to burgeoning international and maritime trade (Cerutti 1983). After the Civil War, the region's population was almost equally split between Anglos and Hispanics. By the 1880s and 1890s, however, Anglos began taking over large ranches by purchasing them or acquiring them through marriage, and by fraudulent means, thereby displacing Mexican ranchers. Nevertheless, the existing Mexican American population, together with a constant influx of Mexican immigrants, would play a major role in the development of commercial export-oriented agriculture. As the transportation of commercial crops increased, activity at the port grew—with the majority of the shipments passing through the tip of Texas (Chambers 1930).

8.2.1. The Establishment of the Navigation District and the Opening of the Port of Brownsville, 1936

Almost 90 years after the beginning of the steamboat era, residents of the Brownsville-Matamoros region witnessed the commencement of another phase in the waterborne transportation-influenced political-economic history of South Texas. Concurrent with a land boom of the 1920s and the growth of Brownsville and the Rio Grande Valley, Brownsville residents approved the construction of the Brownsville Navigation District in the winter of 1928, and the construction of a ship channel in the Brazos Santiago Pass (Garza and Long 2009). The Port of Brownsville opened on May 15, 1936, ushering in the modern era of international commerce via the Gulf of Mexico (Chilton 1997; Florey 1995).

The port would not only pull Brownsville and Matamoros closer together, but also the United States and Mexico as well. Offering deepwater services for cargo from around the world, the port became a crucial part of the bi-national economy of the Rio Grande Valley and northeastern Mexico. The port was strategically connected to the Missouri Pacific railroad, the Southern Pacific Transportation Company, and the National Railways of Mexico (Garza and Long 2009). Early on, steamship and stevedoring companies operated out of the port: Lallier and Company and Philen, Miller and Company. Other companies that soon began doing business there were the Texas Company (bulking station), Magnolia Petroleum Company, and the Aransas Compress Company. The port recorded 112 sailings during its first year of operation (Ferguson 1976).

8.2.2. The Port of Brownsville Region During and After World War II

During World War II, the Brownsville region, for the first time, became the site of significant shipbuilding and industrial activity. The Defense Plant Corporation (DPC) took over administration of the Brownsville Shipbuilding Corporation, established in 1941, and built 467 barges and 12 steel-hulled subchasers. After the war, however, shipbuilding activity dried up, as the port reoriented toward industrial chemical production and bulk cargo shipping (Rozeff 2009). In 1949, the southern end of the Gulf Intracoastal Waterway System reached the Port of Brownsville, and the ship channel was enlarged to accommodate larger vessels. Vegetable and citrus traffic through the port grew as commercial agriculture expanded in the Rio Grande Valley. Cotton exports from the region also exploded, turning the port into the world's largest exporter of cotton for a period in the 1950s (Garza and Long, 2011). In 1946, Carthage Hydrocol signed a contract with the Port of Brownsville to build a $20 million chemical plant. The plant closed in 1953, however, before going through two more ownership changes, in 1956, under Standard Oil of Indiana/Amoco Chemicals and, in 1958, under Union Carbide. A year later, Union Carbide opened a butane oxidation plant to manufacture acetic acid and co-products, operating the complex until it closed in 1981 (Zamora 1998).

During the 1960s, the Port of Brownsville exploited a loophole in the 1959 U.S. oil import quota system. Oil imported into the United States overland via pipeline from Canada and Mexico was exempted from quotas. Companies took advantage of this in several ways, usually by moving Mexican oil to the Port of Brownsville, acknowledged by the Mexican government as its northern terminal. The oil was moved into Mexico, then trucked across the border into the United States—a maneuver known as "the Brownsville Loop," "Brownsville U-Turn," "El Loophole," or "Brownsville Shuffle"—thus satisfying the overland exemption rule, which lasted until 1971, and generating a substantial volume of oil traffic through Brownsville (Cochrane 1981).

The port also provided a boost to the local and global fishing industry. Reminiscent of the 1920s land boom that brought an influx of Anglos, an influx of shrimpers from Louisiana and other parts of Texas occurred in the 1950s. The Fishing Harbor (with three 12-foot-deep basins), located four miles east of the Turning Basin, was allocated over 10,000 feet of dock and became "the home of the one of the largest shrimp boat fleets in the Gulf of Mexico" (Florey 1995).

By the 1960s, Port Isabel's population reached 5,300, and the community continued to play an important role as a shipping industry center and military station. Oil, citrus and cotton, along with many other goods from the greater Rio Grande Valley, made their way to distant places via Port Isabel as well as Brownsville. Small local shipyards were established in the region to build shipping vessels. In 1957, the U.S. Navy constructed the Auxiliary Air Station on the site of the old Laguna Madre Sub base. Although the largest military aviation site was in Harlingen (Harlingen Aerial Gunnery School, later renamed Harlingen Army Air Field), the 8,000-foot airstrip at Port Isabel assisted Harlingen-based operations. The Port Isabel naval auxiliary base also became the national training center for the U.S. Border Patrol (Port Isabel Chamber of Commerce 1962).

Away from the port, the 1965 Border Industrialization Program (BIP), which established the maquiladora industry, boosted the region's economic growth. A little over a decade after the BIP's implementation, more than 100 firms established manufacturing plants in the Brownsville-Matamoros Border Region, including petrochemical and metal companies.

8.2.3. Shipbuilding and Fabrication and Early Offshore Oil Industry

In 1964, an effort to reestablish shipbuilding at Brownsville began when $50,000 was budgeted for industrial site preparation for a new shipyard (Rozeff 2009). The Rockwell Yacht and Supply Company opened and eventually employed 65 people at the port, but it ceased operations in the economic downturn of 1967. During the late-1960s and early-1970s, there was renewed interest in the port, but the focus turned to shipbreaking—cutting down merchant or naval ships for recycling—rather than building. As early as 1969, Luria Brothers and Company established a business dismantling ships for scrap metal. The following year, Consolidated Steel Corporation began business in the port with a 54-acre lease for a ship dismantling plant. Andy International followed as the third ship dismantling company. Together, the companies employed over 300 workers (Chilton 1997).

Brownsville became a shipbreaking hub for several reasons: an ample, cheap, nonunion labor pool in a right-to-work state; local support in a pro-industry climate; tropical weather permitting an uninterrupted work schedule; and easy access to foreign and domestic steel and recycling markets. However, in the late-1970s, the U.S. government began sending many of its junk ships, the "ghost fleet" of obsolete Navy and transport ships, overseas—to Taiwan, China, India, and, more recently, Bangladesh. Dismantling there was cheaper, with few regulations on worker safety, pay, or environmental practices (Englund and Cohn 1997).

Beginning in 1971 and for nearly 15 years thereafter, Marathon-LeTourneau Offshore built jack-up rigs and semi-submersibles for the offshore petroleum industry. The company leased 130 acres, and construction of its shipyard facilities was financed in part by $6 million in Brownsville Navigation District revenue bonds. Like other offshore service companies, Marathon chose Brownville because of cheap labor, favorable weather conditions year-round, and deepwater access. The yard went through a major expansion in early-1972 to accommodate its increased rig orders (Offshore 1972). Part of this expansion included its own in-house training program to bring in and train Mexican workers, many of whom were recruited from Mexico's established

metal industry. When original skilled welders left the firm, Mexican welders, who were newly trained and less well-paid, replaced them. During peak periods, Marathon-LeTourneau employed 1,400 workers, as many as 70% of them Mexican. Welder pay in the early-1970s was $10/hour, but, by 1979, it had dropped to $6.50/hour. Nevertheless, Marathon was the area's largest single employer during the 1970s (Miller 1982).

Shortly after construction began on Marathon-LeTourneau's shipyard, workers began to protest the wages and working conditions, leading to a push for unionization. In the mid-1970s, a local chapter of the United Steel Workers of America established a presence at Marathon. When the union contract expired in 1977, the shipyard would not renegotiate. A heated battle ensued, following a strike, but the union was ultimately defeated a year later. Despite struggling with legal battles and cost overruns, the firm rebounded and capitalized on a booming rig market in the late-1970s. The number of workers at the yard fluctuated, depending on the number of contracts the company obtained, but it exceeded 1,500. Services offered by the company included manufacturing/importing, refinery construction, oil and gas well building, repairing and dismantling, miscellaneous metalwork manufacturing, fabrication of plate metals, manufacturing of power hand tools, and building or repairing ships as well as offshore drilling rigs and platforms.

8.2.4. Downturn of the 1980s

During the early-1980s, the Marathon-LeTourneau shipyard in Brownsville suffered a fate similar to that of other fabricators along the Gulf Coast. When the drilling rig market crashed, the company began losing orders. After almost a decade of contracts for jack-up rigs, semi-submersibles for the oil industry, and other products, Marathon-LeTourneau closed its doors in 1988, the Brownsville yard having delivered its final jack-up rig in 1985. As prices declined and oil supply increased, the demand for new rigs subsided, reducing the number of employees to 500. The following year, in 1986, the number of employees dropped to 200. By late-1986, Marathon was hiring on a temporary basis given fluctuations in the company's contracts to repair and/or build new rigs (Chilton 1997). In the late-1980s, John Allison and his step-son-in-law Tony McDermid of Allison-McDermid (also a local concern) leased the Marathon-LeTourneau shipyard mainly to repair offshore drilling units. In 1990, Keppel FELS purchased a 60% stake of the Allison-McDermid yard, which then became AmFELS (American Far East Levingston Shipbuilding). In 1992, following a case litigated for two years, AmFELS bought out Allison-McDermid and became a wholly-owned subsidiary of Keppel FELS (Scoping Report n.d.).

8.2.5. Deepwater Gulf of Mexico, 1990s to 2008

Brownsville/Port Isabel region ship and rig building remained strong throughout this period. In 1992, AmFELS had a workforce of about 200 and, in 1994, completed converting two drill barges that were to be used in Venezuela. Other operations included construction of barges and power barges, manufacturing and repairing rigs and sulfur carriers, along with building new ships. In 1996, the company began leasing a floating drydock with a 30,000-ton lifting capacity from the Port of Brownsville. In addition to a 700-ton floating crane, the drydock provided the shipyard with a full range of repair, refurbish, and upgrade work for offshore rigs operating in the Gulf of Mexico and became the largest in the state (Chilton 1997). The unique partnership between an international company and a South Texas port not only brought jobs and other economic benefits to the region, but also created "greater geopolitical and cultural understanding" (Scoping Report n.d.). Due to this focus on repairs, refurbishment, and

upgrading, AmFELS came to be known as a "conversion yard." The conversion projects demanded more labor and, by 1997, the plant employed 1,600 workers—half AmFELS employees and half subcontractors for rig owners (Chilton 1997).

During the fieldwork period, AmFELS specialized in jack-up rigs, in addition to constructing semi-submersibles and doing some repair and conversions. Between 2007 and 2009, AmFELS completed and delivered five ultra-premium LeTourneau Super 116E class jackup offshore drilling rigs for Scorpion Offshore, LTD (Scorpion Offshore 2011), and these contracts employed nearly 2,400 workers (JT001 2008). In 2008, estimated sales reached $350,388,000 (MacRae's Blue Book 2008). The company was also operating a yard 60 kilometers south of Brownsville in Mesquital, Mexico, although few specifics of this operation were available to the research team.

Brownsville's shipbreaking businesses continued to operate through the 1990s and through the mid-2000s along the Brownsville Ship Channel. Four companies were in operation at the beginning of fieldwork for this study: ESCO Marine, International Shipbreaking, Marine Metals/Transforma Marine, and All Star Metals. At the time, only two other shipbreaking operations existed in the United States, one in Maryland and the other in Virginia. A national trend toward exporting "ghost ships" outside of the United States for dismantling was, in part, reversed under the Clinton administration, following publication of a Pulitzer Prize-winning *Baltimore Sun* investigative report, "The Shipbreakers" (Englund and Cohn 1997). The Clinton administration banned exports of ghost ships to countries with lax safety and environmental laws, and, beginning in 1994, U.S. Navy policy required that Navy ships be dismantled in U.S. yards. In 2003, the U.S. Maritime Administration (MARAD) awarded 13 vessels in the ghost fleet to a shipbreaking firm in the United Kingdom, offering $17.8 million to dismantle them (Macaluso 2003). Environmentalists in the United Kingdom and U.S. shipbreakers protested strongly, and dismantling of the four vessels already towed overseas was put on hold. Brownsville breakers received MARAD contracts for the other nine ships. Between 2001 and 2004, 23 of the 31 ghost fleet ships that were dismantled were broken in the Brownsville yards. From 2004 and 2005, MARAD paid the six U.S. dismantlers $35 million to recycle 33 ships (Glader 2006). In addition, the companies retained all profits from the sale of scrap steel, copper, and other metals.

By the mid-2000s, after labor shortages undermined the shrimp industry, the Port of Port Isabel had begun making the transition from a fishing port to an industrial one. At the time of fieldwork for this study, Subsea 7, a Norwegian engineering and construction company, had signed a 25-year lease with the Port Isabel Logistical Offshore Terminal to build a pipe assembly plant and spoolbase on a 58-acre site at the Port Isabel-San Benito Navigation District's turning basin. Owners of Subsea 7, a company valued at $32 million, hoped to expand its U.S. operations, and attract offshore oil and gas industry suppliers to the area. At the time of fieldwork for the study, the company had the capacity to employ up to 100 workers when in full operation. The Subsea 7 spoolbase began fabrication and installation of two flowlines totaling 36 miles for Marathon Oil Corporation's Droshky field in Green Canyon which has water depths ranging from 1,350 feet to 3,000 feet and lies approximately 180 km south of Houma, Louisiana (Subsea 7 2009).

8.3. FABRICATION AND SHIPBUILDING IN THE CONTEXT OF OTHER OCCUPATIONS AND INDUSTRIES

The introduction of the railroad and the shift from a ranching economy to a commercial agriculture economy helped shape the Brownsville/Port Isabel region's history. By the early-20th century, the Rio Grande Valley was known for its rich citrus industry, reflecting an agricultural transformation which, along with other economic changes, shaped social relations. As Anglos moved to the region, tensions emerged between the established "Tejano"[33] community and the newcomers. Anglo speculators, colonists, and ambitious entrepreneurs made the trip to the southern tip of Texas to begin new lives. Advertisements of abundant fertile land and the "year round" season for a variety of profitable crops attracted people from all over the nation. At one point, as many as 200 land seekers made the train trip to the region in a single day. Soon, the discourse on cheap land, fertile land, and all-season crops created the image of a "Mágico Valle del Rio Grande" or the Magic Rio Grande Valley—the "magic" being the potential for "year round" agricultural production. This new social and political-economic order affected the local population. Ethnic Mexicans would suffer through loss of land, political power, and economic status. By the 1920s, most independent "vaqueros" (cowboys) and other ethnic Mexicans wound up performing stoop labor in the fields (Garza and Long 2009).

By the middle of the 20th century, Port Isabel had become known as "the shrimp capital of the world," and shrimping would remain the city's largest single industry for nearly five decades. In 1950, "more than seven thousand boats were operating along the Gulf Coast and more than 100,000 men were employed either directly or in the closely allied industries" (Port Isabel Chamber of Commerce 1962). Annual catches could be worth up to $75 million. In 1958, total shrimp production exceeded 11 million pounds (Port Isabel Chamber of Commerce 1962). In the 1990s, the port was home to 360 offshore boats (the smaller shrimping boats are not included) and the United States' largest shrimping fleet. In 1994, shrimping's annual value reached $64 million and the port ranked fourth in the world for the value of the catch it shipped (Addams and Knopp 1997). The port, together with the Port of Brownsville, formed an economic hub for the fishing industry. However, lower shrimp prices, competition from shrimp imports, and high fuel prices contributed to a decline in the industry. Table 8.1 shows the fluctuations in both the quantity and value of the fishery catch at the two ports.

During the 1950s and 60s, industrial activity at Port Isabel and the Port of Brownsville expanded, establishing the foundation on which current fabrication and shipbuilding activities developed. The general economic downturn of the 1980s dealt a severe blow to petroleum industry-related enterprises. At a regional level, as noted earlier, economic activities associated with the U.S.-Mexico border, such as international commerce and retail trade, largely overshadowed industrial activities. Even Port Isabel Naval Auxiliary Base now serves as the Port Isabel processing center, a detention center housing undocumented immigrants (Port Isabel Chamber of Commerce 1962; Essex 2008; McKenna 1956). Despite the lower earning opportunities of these nonindustrial sectors, family and community ties keep many residents in the region, or, if they leave, eventually draw them back to "the Valley" (RC004 2008; RC057 2008).

[33] "Tejano" refers to the ethnic Mexicans living in Texas in the late-19th and early-20th century. Ethnic Mexicans refers to people of Mexican descent living in the U.S. with or without citizenship (Warnock 2004).

Table 8.1.

Commercial Fishery Landings and Value at Brownsville and Port Isabel

Year	Quantity (million Pounds)	Value (million dollars)*
2010	22.7	52.5
2009	27.0	41.0
2008	20.4	49.3
2007	23.2	49.7
2006	30.5	52.0**
2004	20.1	45.0
2003	18.7	40.3
2002	17.9	35.9**
2001	19.9	44.1**
2000	22.4	59.8**
1999	29.2	88.6**
1998	22.2	65.2**

*Note that value varies by species, so there is no direct correlation between quantity and value.
**Brownsville-Port Isabel was in the top ten U.S. ports in value in these years.
Source: National Marine Fisheries Service (NMFS) n.d.

South Texas appears destined to be the next major urban conglomerate along the Gulf Coast. One of every ten new Texans in the 1990s took up residence in South Texas and, when fieldwork was conducted, the South Texas population already exceeded that of the Austin-San Marcos area. By 2010, demographers projected that more than 1.7 million people would be living in the greater South Texas region from Laredo to Brownsville and that, by 2030, 3.5 million people will call South Texas communities their homes. The big growth corridor includes Brownsville-Harlingen-San Benito, Laredo and McAllen-Edinburg-Mission. These three metropolitan areas represent a major portion of the state's population. Along with demographic growth, a Texas version of the shift in nationwide racial and ethnic trends is likely to occur. This, too, will probably affect business decisions by companies planning to move to South Texas and the development of the greater Rio Grande Valley region (Window on State Government 2009).

8.4. INFLUENCE OF THE INDUSTRY ON THE PHYSICAL FEATURES OF THE REGION

Land available for the fabrication and shipbuilding industry is generally concentrated at the two regional ports. While access to the water is a critical component for a shipyard or fabrication yard, other factors, such as utilities, municipal services, and roads are conditions for the successful opening and operation of a yard. Lacking the long and continuous history of shipbuilding and fabrication activity that characterizes some of the other communities profiled in this report, the communities of South Texas have focused their efforts on establishing yards and facilities at the ports.

Figures 8.4 characterizes land use types found and distributed in the region based on land use classifications from the National Land Cover Database (NLCD, completed in 2001). It shows the high concentration of industrial and heavy commercial land use around the two ports.

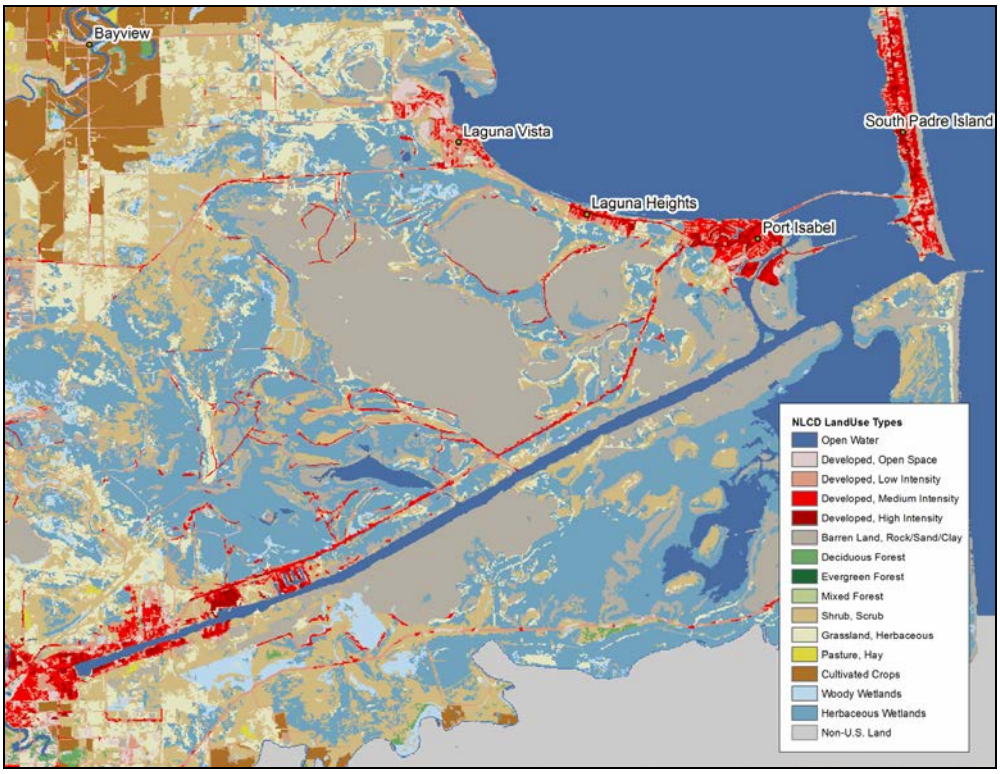

Figure 8.4. Land Use Classifications from the 2001 National Land Cover Dataset (NLCD) for communities of South Texas.

Source: Multi-Resolution Land Characteristics Consortium 2001.

8.4.1. Waterways, Roadways, and Airports

U.S. Highway 77 connects deep South Texas with northern parts of the state, and State Highway 48 links Port Isabel and South Padre Island with Brownsville to the southwest. Three bridges connect Brownsville and Matamoros, Mexico: the Brownsville and Matamoros Bridge, the Gateway International Bridge, and the Veterans International Bridge. Local concerns about inadequate transportation infrastructure focus on dredging to maintain and expand the ship channel; upgrading Highway 77 between Brownsville and Corpus Christi to interstate status; rerouting the train to loop around Brownsville rather than going directly through town; and construction of a new international bridge, which has already received a permit. Although these concerns are of interest to fabrication and shipbuilding company owners, managers, and workers, the concerns were driven less by oil and gas-related activities than by the region's current role in international commerce and efforts to capture some of the large-ship traffic expected to result from improvements to the Panama Canal. Locally, a more significant transportation concern is the need to improve and enhance public transportation, particularly to increase access of workers from cities and nearby residential areas to job sites at the ports.

8.4.2. Housing, Commuting, and Traffic

Housing in the Brownsville/Port Isabel region is diverse. For example, wealthy neighborhoods intermingle with poor neighborhoods, often just streets apart. In the historic center, the largest and most expensive homes nestle against the "resacas" (oxbow lakes). Poorer areas, many designated as "colonias" (unincorporated subdivisions) by the U.S., state, and municipal government, are located in the southeast, including near the international airport. Newer housing developments are located along city peripheries, notably to the north and west of Brownsville. Fabrication workers live throughout the region, driving from across Brownsville as well as from surrounding towns and cities, such as South Padre Island, Los Fresnos, Harlingen, and San Benito (RC061 2008; RC060 2008; RC063 2008; RC083 2008). From 1970-2007, the gross median rent in the Brownsville-Harlingen MSA increased 72.3%. In Brownsville it increased 57.2%, in the suburbs 56.7%, in Harlingen70.9%, and in Port Isabel 71.9% (see Appendix K).

The proportion of people with rents in the lowest 20th national percentile decreased from 63.9% in 1970 to 47% in 2000. Meanwhile, for the same period, the proportion of people with rents in the middle 60th national percentile increased from 29.8% to 49%, and the proportion of people with rents in the upper 20th national percentile decreased from 6.3% to 4%. Harlingen has the smallest proportion of rents in the lowest 20th national percentile (37.3%), while the suburbs of the Brownsville-Harlingen MSA has the greatest proportion (52.8%), followed closely by 48.9% in Port Isabel and 48.7% in Brownsville (see Appendix K).

At $63,491, the median home value for the Brownsville-Harlingen MSA is relatively low. As of 2000, 66.4% of the MSA's home values were in the lowest 20th national percentile, an increase from 64.2% since 1970. In 2000, 30.9% of the MSA's home values were in the middle 60th national percentile, having decreased from 31.1% in 1970. Only 2.7% of the MSA's housing fell into the upper 20th national percentile, down from 4.5% in 1970. Brownsville has highest proportion of homes with median values in the lowest 20th percentile, while Harlingen has the lowest (see Appendix K).

In 1970, 60,947 units (66.4%) in the Brownsville-Harlingen MSA were owner-occupied (Figure 8.5), whereas roughly half that number and percentage, 30,822 units (33.6%), were renter-occupied. A noteworthy and growing portion of the MSA's housing units was unoccupied during 1970-2007: 7.1% versus 14.6% (see Appendix K).

It is difficult to obtain good estimates of workforce commuting in Cameron County, where Brownville is the county seat. Journey to work data do not estimate the number of Mexicans commuting into the county for work. These data measure/estimate the number of Cameron County "residents" (legal or undocumented) commuting out of the county into Mexico, but not the number of "non-residents" (Mexicans) commuting into the county. Therefore, this section refers to, and can only account for, residents of the United States. Intuition and anecdotal evidence suggest that a large number of Mexicans probably commute into Cameron County for work. However, it is impossible to offer conclusions about Cameron County's commuting surpluses and deficits.

The total number of commuters working in Cameron County increased 194%, from 35,855 in 1970 to 105,521 in 2000 (Table 8.2). The number of Cameron County residents commuting to other counties increased 409%, from 1,667 in 1970 to 8,486 in 2000. Only 8% of Cameron County's workers leave the county, and they commute primarily to Hidalgo County (62.4%) and Mexico (14.6%). The number of non-Cameron County residents working in Cameron County

increased 526%, comprising 7.7% of the total workforce in 2000, up from 3.6% in 1970. Non-residents commute primarily from Hidalgo County (73%) and from Willacy County (17.8%) less frequently (see Appendix K).

The primary economic sector luring workers away from Cameron County is services, followed by retail trade, state and local government employment, and manufacturing. The largest sector attracting Cameron County commuters is services, followed by retail, construction, and manufacturing. Of Cameron County's manufacturing workers 9.2% are commuters, 74% from Hidalgo County and 18.1% from Willacy County. According to the 2000 Census, manufacturing drew workers from six counties in Texas and one county in South Dakota. Yet, manufacturing does not lure a significant number of commuters to Cameron County and, thus, plays a small role in its commuting patterns (see Appendix K).

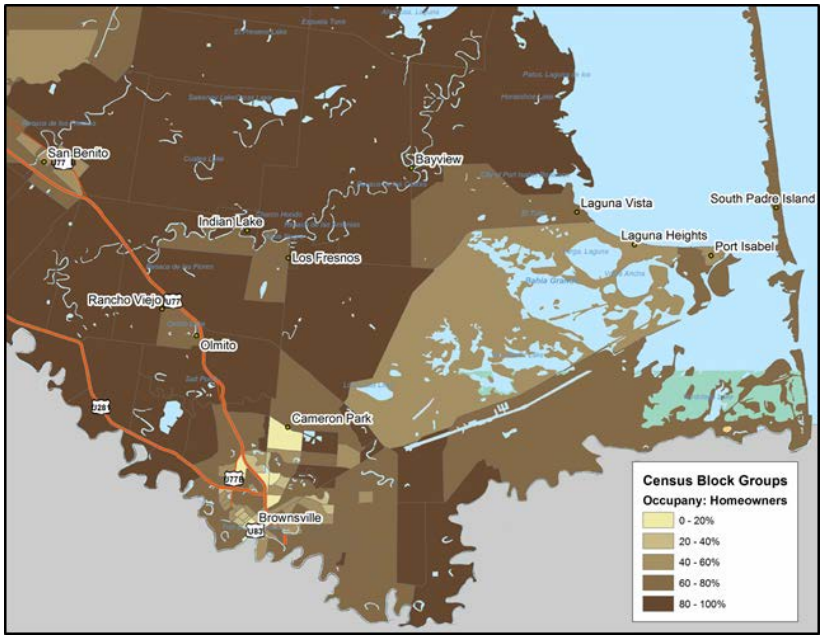

Figure 8.5. Housing occupancy: homeowners.

Source: U.S. Census Bureau 2000 Summary File 1; U.S. Census Bureau 2010 Summary File 1.

Table 8.2.

Work Commuting Patterns by Decade for Cameron County

	1970	1980	1990	2000
Staying	34,555	65,552	79,910	97,380
Entering	1,300	3,231	4,418	8,141
Leaving	1,667	3,872	4,732	8,486

Source: U.S. Census Bureau, Journey to Work and Place of Work Data.
Source: U.S. Department of Labor, Bureau of Labor Statistics, Local Area Unemployment Statistics.

8.4.3. Recent Developments at the Ports of Brownsville and Port Isabel

Though development in the Padre Island Gas Field proceeded slowly through the 2000s, on December 31, 2010, Victory Energy Corporation entered into an option agreement to acquire leases and available oil and gas mineral rights within a 1,000 acre tract of land on South Padre Island that is part of that field (Victory Energy Corporation n.d.). That, and continued development of the deepwater fields in the Western Gulf of Mexico, make it possible that speculation of growth at the area's ports will be realized at some point in the future.

8.4.4. Economic and Industrial Development

Economic and industrial development in Brownsville/Port Isabel occurs at both county and city levels. The Cameron County Chamber of Commerce works to support and promote local businesses. The Brownsville Economic Development Council is a business league contracted by the Greater Brownsville Incentives Corporation to promote economic and industrial development in the region (Brownsville Economic Development Council 2010). A new initiative, the Brownsville-Matamoros United Golf Tournament, was established in 2007 as a regional industrial networking event to help advertise and market the economic advantages of conducting business along the border and dedicated to serving the industrial and economic growth of the global marketplace. The University of Texas at Brownsville's International Innovation Center serves as a business incubator, providing import/export assistance and banking services to its clients (UTB-STC WTCE 2009). The City of Port Isabel has its own Chamber of Commerce and an Economic Development Corporation, which is a city department (Port Isabel Development Corporation 2009). Notably, individuals and companies who were not directly involved with the ports or fabrication and shipbuilding companies indicated little, if any, awareness of activities at the ports. Although some study participants acknowledged the significant presence of oil-related fabrication at the Port of Brownsville, most remarked that the port was underutilized, but did not associate its underutilization with the region's key economic development activities (SF006 2007).

At the county level, Workforce Solutions of Cameron County was one of the more active business-oriented entities during fieldwork for this study. The organization had identified three industries on whose development the regional leaders should focus in the near future: advanced

technology and manufacturing, financial services, and administrative and support services (CT Advisory Services 2008). Workforce Solutions officials considered those industries capable of giving the community the highest return on the time and money investments necessary to attract, develop and expand companies. Both the advanced technology and manufacturing industries build upon the strengths of Cameron County's existing industries.

Another initiative, Imagine! Brownsville, was also underway during fieldwork and subsequently completed. Sponsored by the City of Brownsville, Greater Brownsville Incentives Corporation, and Brownsville Community Improvement Corporation, this initiative resulted in the development of a 10-year comprehensive plan to establish objectives linked to the community's vision, as well as an implementable strategy to leverage the "community's natural, institutional, human, economic, and infrastructure resources in an effective, competitive and sustainable way" (Imagine! Brownsville 2010). The Brownsville City Commission received and adopted the 10-year plan in July 2009.

Several factors pointed to a period of growth and expansion in the Brownsville/Port Isabel region: passage of the North American Free Trade Agreement (NAFTA), growth of the maquiladora sector, new oil discoveries in the far western Gulf of Mexico, and the challenges faced by companies operating out of southern Louisiana and Mississippi after the 2005 hurricanes. Observers expected historically low costs of production due to low wages, as well as proximity to Mexico and port facilities with deepwater access, to attract offshore companies to the region However, the economic downturn which began in 2008, concerns over increasing violence on Mexico's northern border at the end of the decade, and the withdrawal of interest by several prospective employers meant that the anticipated growth and expansion of the fabrication and shipbuilding industry had not occurred by the time this study was concluding.

In general, various efforts to spur the integrated growth and development of Brownsville-Matamoros have met with some success. The sister cities have been recognized as a single business-friendly community (e.g., Forbes 2007). However, even limited growth and development have created new challenges or caused past problems to reemerge. Several specific issues plague development at the Port of Brownsville: mismanagement of past construction projects, labor tensions related to the arrival of a non-union company, and environmental contamination, particularly involving asbestos (Perez-Treviño 2005; Addams and Knopp 1997; WatersKraus 2009).

8.5. INFLUENCE OF THE INDUSTRY ON THE POPULATION OF THE REGION

The fabrication and shipbuilding industry of Brownsville/Port Isabel is much less visible than that of other study areas, it accounts for a smaller portion of the area's overall economic picture, and it is little recognized by many of the region's residents. Nevertheless, the presence of a large, multinational fabricator, shipbreakers, and various support businesses at the Port of Brownsville cannot be ignored. The following sections summarize trends in employment and wages within Cameron County and the major cities in this study area.

8.5.1. General Population Dynamics

From 1970 to 2007, Cameron County's population rose from 140,368 in 1970 to an estimated 387,210 in 2007—a dramatic increase of 176% (see Appendix K). Supporting this remarkable overall demographic growth were strong population gains in every year, in every decade, and at higher rates than the state of Texas (Figures 8.6 and 8.7). Cameron County grew 49.4% in the 1970s, 24.8% in the 1980s, 28.6% in the 1990s, and 15% from 2000 to 2007. The population of

all communities in the county also grew, especially City of Brownsville, whose population Brownsville grew 234%, from 52,522 in 1970 to an estimated 1,745,494 in 2008. During the same period, Harlingen's population shot up 93.5%, from 33,515 to an estimated 64,843, while the number of Port Isabel resident nearly doubled, from 2,745 in 1970 to an estimated 5,290 (a 92.17% increase). During 2000-2008, every town in Cameron County, except Palm Valley, grew demographically. Cameron's male population increased 175.6%, from 67,264 in 1970 to 185,480 in 2007, peaking in 2007. However, the males as a proportion of the total population remained unchanged: it was 47.9% of the population in both 1970 and 2007 (see Appendix K).

Net domestic migration numbers indicate that more residents have been exiting Cameron County than entering (see Appendix K). In the 1990s, an average of 801 more people per year exited the county than entered and, during 2000-2007, an average of 1,381 more people per year exited than entered. From 1997 to 2001, Cameron County witnessed a particularly significant surge in the number of people exiting versus entering. Meanwhile, Cameron County's number of births increased 67.4% from 1981 to 2007, a figure higher than the state average of 47.2%. However, the number of births per capita decreased 4.8% (see Appendix K).

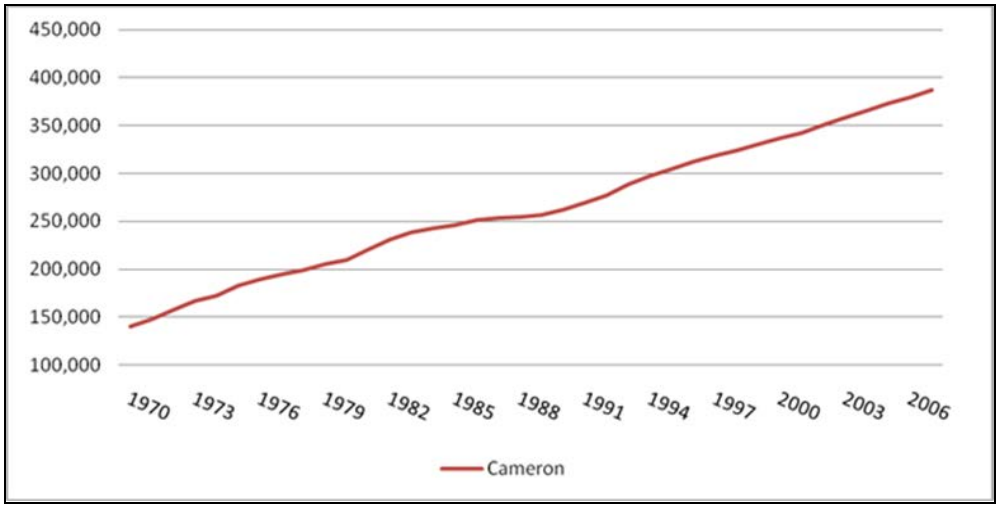

Figure 8.6. Population of Cameron County.

Source: U.S. Census Bureau, Population Estimates, County.

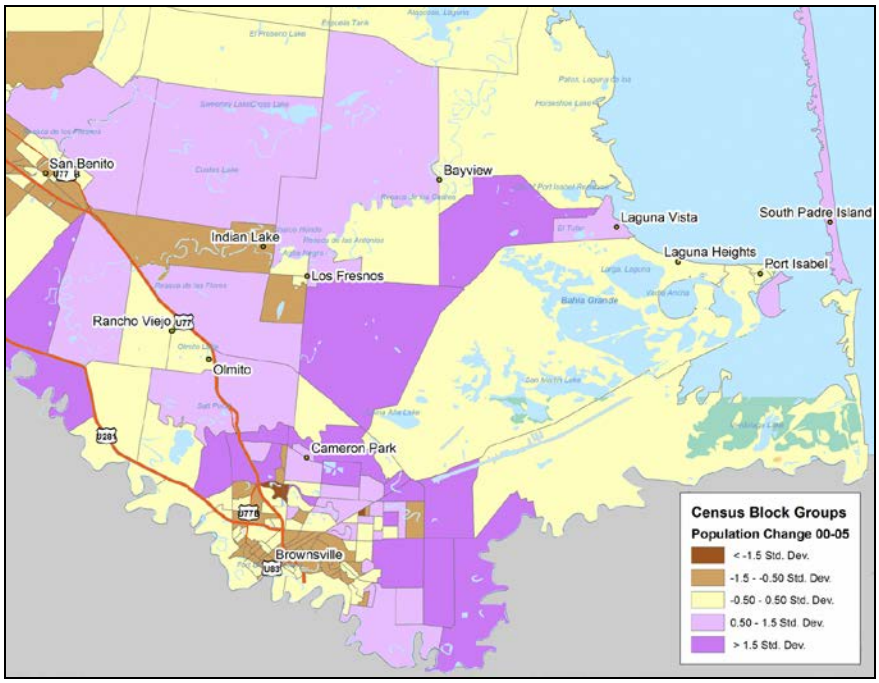

Figure 8.7. Percent population change in South Texas Census 2000 to Census 2005.

Source: U.S. Census Bureau 2000 Summary File 1; U.S. Census Bureau 2010 Summary File 1.

The population of Cameron County has been increasing, due to the number of local residents having children, and the number of foreign nationals becoming residents, rather than because people from elsewhere in the United States have been moving to the county (see Appendix K, pp. 141 - 142). The household composition of the Brownsville-Harlingen MSA is changing, as well. In 1970, married couples headed 81.3% of all households, a percentage that dropped to an estimated 70.2% in 2007 (see Appendix K).

From 1970 to 2007, Cameron County's median income was lower than the state's median income and grew at a lower rate than the state's. In 2007, the median income for Cameron County residents was $29,589, as against $47,563 for Texas—a difference of about $18,000. The median income in Cameron County increased only 11% during 2000-2007, declining two times, in 2001 and 2005. Real median family incomes declined during the 1980s, but the 1970s and 1990s produced income growth. In 2007, the real median family income for Brownsville was $26,525, while the real median family income for Harlingen was $30,936 (see Appendix K, pp. 144 - 148).

The proportion of people in the Brownsville-Harlingen MSA with incomes in the lowest 20th percentile decreased from 49% to 43.6% during 1969-1999, and the proportion in the middle 60th percentile increased from 43.6% to 49.2%. By contrast, the proportion of people in the upper 20th percentile decreased from 7.4% to 7.2%. Port Isabel had the highest concentration of people with low incomes, whereas the highest concentrations of people with middle and upper incomes are found in Harlingen (see Appendix K, pp. 147 - 148).

The number of people living below the poverty line in Cameron County increased 19.7% from 1989 to 2007, but the proportion of people coping with especially low incomes decreased from 42.2% to 34.4% (see Appendix K, pp. 146 - 148). As of 2005, people living below the

poverty line comprised higher proportions of Brownsville's population (31.2%) and the population of the suburbs (30.6%) than the proportion of Brownsville-Harlingen MSA's population (29.5%). Meanwhile, the proportions of people living below the poverty line were lower in Port Isabel (24%) and Harlingen (22.5%). Overall, the proportion of Cameron County's population living below the poverty line was significantly higher than the proportions in the State of Texas, and consistently ran 20% higher. There is an incredible amount of poverty in Cameron County. Viewed from the standpoints of wages and impoverishment, the 1980s were devastating for deep South Texas, particularly Port Isabel.

8.5.2. Workforce Development and Trends

As was the case in Coastal Bend (see Chapter 7 of this volume), workers in the Rio Grande Valley work in the shipbuilding and fabrication industry across the Gulf of Mexico. They acquire knowledge and skills in formal training programs as well as through mentoring relationships and apprenticeships. Welders, for example, reported that they learned their craft in their backyards from fathers or uncles, in a college metal fabrication program, at a private, for-profit welding school, and/or at an on-site yard training school. However workers gain experience and acquire skills, they view the shipbuilding and fabrication industry as a viable career option in a region where welders, fitters, and other skilled craft laborers earn more than workers in most other jobs (RC065). This reflects the overall regional economy, as beginning welders earn around $7.50 an hour, markedly lower than those in other places along the Gulf.

Cameron County's working-age male population has grown from 25,771 in 1970 to 87,358 in 2007, when it peaked. Working-age males increased 239%, from 18.4% of the total population in 1970 to 22.6% in 2007. They also increased at a higher rate than the overall population and general male population, although, during 2000-2007, working-age males and all males increased 15% (see Appendix K).

The number of people employed in Cameron County increased 48.5%, from 90,534 people in 1990 to 134,474 in 2007. Employment increased 30.4% in the 1990s, and 13.9% during 2000-2007. Cameron County increased the total number of jobs every year from 1990 to 2007. The unemployment rate dropped 33.9%, from 12.9% in 1990 to 3.9% in 2007, falling 12.5% in 1992. During 1990-2007, the total number of unemployed persons decreased 36%, from 13,415 people to 8,579 (see Appendix K).

Cameron County's unemployment rate (see Figure 8.8), has usually been lower than the state unemployment rate. In 2006 and 2007, the county's unemployment rate was lower than the national rate as well as the state's.

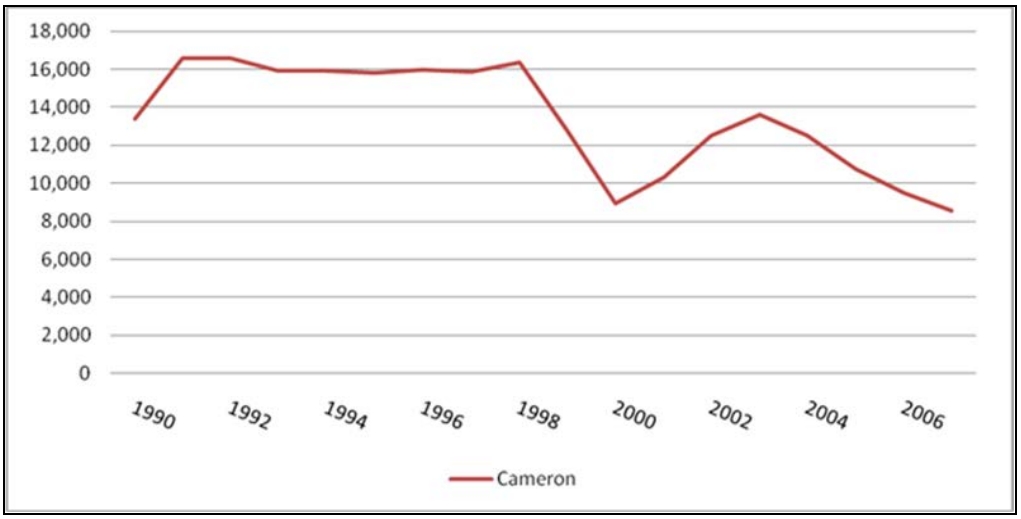

Figure 8.8. Total Number Unemployed in Cameron County.

8.5.2.1. The Shipbuilding and Fabrication Workforce

The Brownsville/Port Isabel shipbuilding and fabrication industry had an upward employment trend during 1990-2007, with a significant peak in 2006 (see Appendix K, pp. 165 - 166). Despite slight declines in employment for brief periods, overall employment growth was steady. Employment growth was somewhat slower in the 1990s than the 2000s, but, in 2006, employment jumped 59%. From 1990 to 2007, the average total number of firms increased from 10 to 19. Overall, in 2007, a larger number of regional shipbuilding and fabrication industry firms employed more workers in 2007 than in 1990.

With respect to shipbuilding and fabrication industry wages over this period, the nominal average annual wage increased (see Appendix K, pp. 166 - 169). Like industry employment, the wage rate generally increased in a stable manner, with only brief periods of decline. Overall, the wage rate rose substantially during 1999-2000 and 2006-2007. As would be expected, real wages exhibited a similar pattern. In relative terms, the wages in shipbuilding and fabrication appear to be well above the median wage rate for other kinds of employment in the surrounding counties and therefore continued to make the shipbuilding and fabrication industries very attractive for skilled workers.

Analyzing the Brownsville/Port Isabel manufacturing sector as a whole, an interesting situation appears to emerge (see Appendix K, pp. 169 - 174). Although overall manufacturing employment exhibited a net increase over the entire study period, especially up to 2000, there was a rather steep decline in total employment since 2000. Somewhat contrary to the trend in manufacturing generally, however, there was a much more noticeable increase in shipbuilding and fabrication industry employment after 1990, and specifically in 2006-2007. Furthermore, there appears to have been much greater employment volatility in the manufacturing sector generally than in shipbuilding and fabrication. Thus, while the manufacturing sector increased its employment in absolute terms, as noted in several of the study areas, the sector's percentage of overall employment has been on the decline since 1980. In fact, by 2006, the service sector, not manufacturing, accounted for almost half of all private employment in the Brownsville/Port Isabel region.

With regard to the overall wage rate and average earnings per jobs, the Brownsville/Port Isabel region, like many other study areas, exhibited significant increases in the nominal wage

rate over during 1970-2007. However, considering the increase in real earnings on a per job basis, a much more modest and telling growth rate emerges. Basically, on a per job basis in real terms, Brownsville/Port Isabel workers barely out-paced inflation over the study period. This finding, significant in itself, gains greater significance for the study, because it denotes the true economic opportunity presented to shipbuilding and fabrication workers, given the increase in the real average wage rate reported for that sector. Simply stated, these workers have significantly outpaced the real increase in wages for other workers.

8.5.2.2. Alternatives for Skilled Workers

The majority of jobs in deep South Texas are in service and retail. The Brownville Chamber of Commerce ranked the city's top "major employers" as: BISD (Brownsville Independent School District), UTB-TSC, Cameron County, Keppel AmFELS, and Wal-Mart (Nelsen 2007). Within the manufacturing sector (including shipbuilding and fabrication), despite the uncertain relationship between the ports and the region's other economic development initiatives, the importance of Keppel AmFELS, the largest company at the Port of Brownsville, is clear. The yard dominates a large portion of the port, and its presence cannot be missed. It is located directly on the highway and visible to anyone who drives to South Padre Island from Brownsville. At the time of fieldwork for this study, the yard had 2,500 employees, of whom 1,000 were direct AmFELS employees. The remaining employees were contracted by any of four contractors used on the yard or by specialty contractors (RC057 2008). Because AmFELS is one of the region's largest employers, many residents knew someone who works on the yard, as a worker, supervisor, or manager. AmFELS successfully and consistently attracted multi-million dollar contracts, and, therefore, served as an economic cornerstone of the community. However, fluctuations in the economy and the oilfield business have led some local leaders and residents to call for greater economic diversification at the port (RC055 2008).

Some study participants perceived AmFELS, under Singaporean ownership, as not only an important employer and economic driver, but also a key to Brownsville's place in the global economy. "We're not an 800-lb. gorilla," one participant noted, but we're friends with several of them" (RC055 2008). Upper managers are primarily Singaporean, middle managers and engineers are generally Anglo-American and Hispanic, and craft laborers are primarily Hispanic (RC056 2008). As in many places throughout Brownsville the workplace at AmFELS is bilingual (RC001 2008),; Spanish is heard in offices and lobbies, and on the yard. Supervisors are expected to be bilingual, and English as a Second Language classes are offered at least once a year (RC057 2008).

The region's shipbreakers also employ large numbers of workers. The skills that shipbreaking workers need, though seemingly similar to those in the fabrication industry, are not necessarily transferable. For instance, shipbreaking requires cutting rather than welding. Moreover, workers generally preferred employment on a yard constructing vessels to jobs on a yard taking vessels apart for scrap (RC064 2008). Nevertheless, the shipbreaking jobs are important locally. One study participant, a Mexican national who worked at a shipbreaking yard, claimed that his was the best job he could get at the port without speaking English (RC001 2008).

Although shrimping had declined considerably in the years just before fieldwork began, the industry still employed a significant number of individuals. However, because the industry requires work away from home and at sea, companies find it difficult to recruit local workers. Thus, despite Cameron County's high unemployment rate, local ads requesting shrimpers or

headers did not usually get many responses. Gulf shrimpers therefore began to hire foreign labor, particularly from Mexico. "Mexicanos" from the Mexican side of the Gulf of Mexico, who learned the shrimp business in places such as La Pesca, Soto la Marina, Tampico, and Veracruz, were attracted to the jobs in the Brownsville area. The pay was low (headers received $20 per 100 pounds of decapitated shrimp in 2008), but still much higher than wages in the Mexican shrimp industry (Essex 2008). To meet their labor demands, according to one study participant (RC001 2008) companies began hiring guestworkers through the H-2B visa program (see Section 8.5.2.5 below).

The Brownsville/Port Isabel region's residents also worked in the "maquila" industry and some remain in agriculture as migrant laborers. A couple of craft laborers who participated in this study cited workplace problems in the "maquila" industry among the reasons they left and were satisfied with their decision to move into the fabrication industry (RC001 2008; RC067 2008). Families from South Texas also continued traveling to the Midwest and other parts of Texas or the South, where doing seasonal agricultural work helped to support their families (RC065 2008; RC041 2008). Concerns about generational dependence on government benefits were expressed in this region as in others included in this study (e.g., RC087 2008).

8.5.2.3. Finding Out About Work

Residents of the Brownsville/Port Isabel region looking for work in the shipbuilding and fabrication industry use a variety of means to gather information. Several workers occupied booths at a job fair in Port Isabel that several dozen young adults attended. Workers also relied on family contacts to find jobs. One man in training to become a welder, for example, expected his father and uncles, who worked at AmFELS, to let him know about job openings when he completed his training (RC065 2008). Non-familial social networks were also important. Training programs were often in direct contact with companies looking to hire, and those companies might be recruiting for companies outside the area. For instance, one welding instructor noted that, just the week before his conversation about this study, he had been contacted by a representative for a company from south Louisiana who was interested in hiring his program graduates (RC060 2008). Instructors generally kept track of which companies were hiring, what they were looking for, and the testing practices they would use during the hiring process.

8.5.2.4. Establishing and Maintaining a Workforce

As noted above, the Brownsville/Port Isabel region's location on the international border creates several unique workforce issues. The border has been relatively fluid since the early days of the region's settlement. One study participant referred to the border as the "bamboo wall," invisible to residents on either side (SF002 2007). Construction of the border wall along the City of Brownsville's levee placed substantial segments of the city between the wall and the river, sparking strong local opposition. Questions about maintaining access to the labor force from Mexico—some documented workers, workers in the process of becoming documented, and undocumented workers—were heightened during fieldwork for this study, due to increasing national security measures in communities along the border. In the past, the local standard for employability had been having family members on the U.S. side, some study participants observed toward the beginning of fieldwork. However, increasingly visible, and sometimes heavy-handed, federal law enforcement was challenging local norms.

Crackdowns by the Department of Homeland Security's Immigration and Customs Enforcement (ICE) for alleged violations of immigration and employment regulations drew attention during fieldwork. In the 1990s, Keppel AmFELS began relying on labor contractors to recruit workers from the area (Perez-Treviño 2008). At one point, the company sought 500-700 welders and skilled laborers for new contracts, and anticipated that new hires could spike up to 2,000 workers over a two-year period. Several companies contracted by AmFELS to secure laborers came under federal investigation and, in 2004, ICE officers raided AmFELS, arresting workers and serving warrants on some contracting company officials (Perez-Treviño 2007a). In 2008, two of those companies plead guilty to charges of hiring undocumented workers. In another incident, of 1,041 labor release workers (a record number) hired to fulfill an AmFELS contract, 624 were determined to be undocumented (Perez-Treviño 2008).

In 2005-2006, Keppel AmFELS began employing immigrants on H-2B visas to help meet labor needs. One study participant estimated that 52% of the welders were working with H-2B visas and, at times, they comprised nearly 75% of the craft labor force (RC056 2008). Due to the AmFELS yard's proximity to Mexico, some of the H-2B workers lived in Matamoros with their families and crossed the border every day to work. An entire family might move from their home, be it in Tampico or other Mexican port cities such as Veracruz, and relocate to Matamoros.

The establishment and sudden departure of a textile plant was also noted as a significant event in the Brownsville/Port Isabel region. The plant reportedly left a significant laboring population with only junior high education levels, thus unprepared "to work in the global economy" (SF006 2007). Although some study participants attributed labor shortages and workforce limitations to elevated high school dropout and illiteracy rates, Brownsville had advertised a strong workforce as one of its strengths. One participant observed that companies from places like the Midwest were looking favorably at South Texas, because they had learned that Hispanic laborers have strong work ethics from Hispanic employees in their Midwest operations (SF006 2007).

Several companies proposed new ways to recruit and secure a labor force. During fieldwork, a number of workforce training, placement, and "transitioning" programs were underway with a focus on skill sets in demand in truck driving, welding, and electrical installation. Demand for electrical installation was attributed to a construction boom on South Padre Island that predated Hurricane Dolly, and was further stimulated by that storm. Some programs made day care facilities available to accommodate women trainees. One commentator noted that training grants from the state generally had stipulations regarding wage levels, thus putting some upward pressure on wage scales, though others observed that, in general, grant monies for workforce development had been decreasing (SF002 2007).

Training centers and schools in the region included the Texas State Technical College (TSTC), in Harlingen, the University of Texas at Brownsville /Texas Southmost College (UTB-TSC), private training schools, and high schools with vocational programs. The TSTC offered a certificate in welding technology and, in 2009, planned to offer an associate degree in welding. The welding program would provide a comprehensive welding education, including TIG welding. TSTC had about 50 students per year at the time of fieldwork, with about two or three female students in the entire cohort. Students at TSTC are primarily recent high school graduates, but there is a wide range of ages. A welding instructor mentioned that the program's enrollment was increasing. However, he noted that the TSTC program's ties with the

shipbuilding and fabrication industry were not as strong as they could be, a situation that could and should be improved:

"That's one of the things that we're trying to bring back; get a little more input about what industry needs. What the companies are expecting from our students. In the past, it hasn't been what the industry is looking for . . . . If we had a real good advisory board committee, where we could get a whole bunch of information about what they need and some of the procedures that they use, then we could transfer that to the students, then maybe things would work together better. That will make the students better to them up front. They wouldn't have to train them completely different (RC060 2008)."

TechPrep is also located at TSTC. One of its goals is to diminish the stigma associated with vocational degrees (RC062 2008). This program, particularly active when the research team conducted fieldwork, had been conducting its own studies and had an active advisory board.

Although UTB-TSC did not have a welding or fabrication-related training program, they were in the process of starting one (UTB-TSC ITEC 2009a). The schools planned to become the training center for the Subsea 7 specialized processes (RC087 2008). The ITEC houses the Workforce Training and Continuing Education wing of UTB-TSC and other non-university agencies and organizations, including the Mexican Consulate. The International Innovation Center has a business incubator, which gives up-and-coming entrepreneurs the space and technical assistance to develop their business (RC087 2008; UTB-TSC WTCE 2009b).

High school vocation training in the area was expanding and improving at the end of fieldwork for this study. There was a new vocational high school in Brownsville (RC087 2008). In addition, area schools have received technical support and materials from area companies and national welding suppliers to improve welding programs—to move them beyond the traditional FFA model of agricultural-needs welding to industrial welding (Crawford and McClellan 2008).

There were growing numbers of private, for-profit training programs in the area oriented to prepare trainees for the test that a welder may typically need pass to get a job (RC087 2008). One training center advertised "combo-welding" classes that incorporate stick, flux-core, and gouging (RC059 2008). These schools cost around $5,000. However, few students pay the full rate, because Workforce Solutions of Cameron County subsidizes tuition and fees.

AmFELS, as the area's largest fabricator, developed its own training programs. The company hires a worker as a helper and, if he or she shows promise, gives the worker the opportunity to take part in the training program, which lasts several weeks. Many workers throughout the Gulf of Mexico are believed to have received training and learned how to weld at AmFELS (RC056 2008; RC057 2008). The Texas Workforce Commission initiated a job-training grant program involving the UTB-TSC in conjunction with Keppel AmFELS to train locals in welding, pipefitting, carpentry, and other industrial jobs. The training programs, located at AmFELS and for AmFELS employees, were welcomed by at least some locals as an opportunity to acquire new skills that could be used not only at AmFELS, but also for varied forms of industrial work (Perez-Treviño 2007b). Other companies, including AMTEX General Contractors, De-Val Construction, CPEP, and Landro Inc., formed a training consortium that received over $733,000 in grant money from the Texas Workforce Commission. However, one of the companies had been indicted for hiring undocumented workers for AmFELS, so this grant came under scrutiny from the Texas Attorney General (Perez-Treviño 2007a; Perez-Treviño 2007b).

Addressing the area's low wages is challenging. South Texas is attractive to business and industry precisely because of its low wages and low cost of living, but area residents express dissatisfaction with current conditions. In a 2007 survey sponsored by Brownsville 2020, a

partnership between the *Brownsville Herald* and the Center for Civic Engagement (UTB-TSC), over 3,300 residents ranked "availability of jobs and sufficient wages" as one of their top five concerns (Cardona and Serrano n.d.). However, as noted above, the higher-paying jobs often require skills that are not available locally.

The proportion of people in the Brownsville-Harlingen MSA without high school diplomas decreased from 65.1% in 1970 to an estimated 38.4% in 2007, while the proportion of people with college degrees or more formal education increased from 7.4% to an estimated 14.5% in 2007. When fieldwork was conducted, the MSA's proportions of people with a high school diploma or more and the proportion of people with a bachelor's degree or more were, and had long been, well below state and national averages for educational attainment. As of 2000, the proportion of people with bachelor's degrees or more in Port Isabel (12.3%) was lower than the MSA average (13.4%), but the proportions were higher in Brownsville (13.4%) and Harlingen (16.8%). Port Isabel made substantial gains in the level of educational attainment. Harlingen had the highest levels of educational attainment, in terms of both high school graduates and college graduates, and held this distinction from 1970 to 2007 (see Appendix K, pp. 148 - 156).

8.5.2.5. Temporary Workers

Throughout the 2000s, a significant number of international immigrants to the Brownsville/Port Isabel region have been individuals who arrived with temporary H-2B visas (see Chapter 2, Volume III). Table 8.3 shows the number of H-2B visas for manufacturing laborers that were certified to companies operating in region between 2000 and 2008. The table shows that the number of requests was significantly higher than the number certified. As noted below the table, the region utilized large numbers of workers with H-2B visas as deckhands on fishing vessels since the inception of the program. The first year companies received workers for manufacturing jobs was 2006. A shift occurred during the decade, as larger numbers of H-2B visas were requested and certified for manufacturing laborers and fewer for workers in the fishing industry.

Table 8.3.

H2B Visa Certifications/Requests for South Texas, 2000-2010*

Year	Construction	Fabrication	Fishing	Hospitality	Other	Timber
1999	0/0	0/0	0/0	0/0	0/0	0/0
2000	0/0	0/0	453/453	20/20	0/0	0/0
2001	0/0	0/0	525/525	20/20	0/0	0/0
2002	0/0	0/0	600/600	13/13	0/0	0/0
2003	0/0	0/0	553/553	16/16	0/0	0/0
2004	154/154	0/0	851/851	188/188	0/0	0/0
2005	470/470	220/220	238/238	22/22	0/0	0/0
2006	285/345	980/1480	424/424	0/0	107/107	0/0
2007	230/230	715/1590	110/352	9/59	110/260	0/0
2008	50/150	620/2330	321/322	10/10	118/120	0/0
2009	70/70	0/0	297/304	0/0	86/95	0/0
2010	0/0	0/85	180/183	6/6	7/37	0/0

*Includes Brownsville, Port Isabel, San Benito
Source: U.S. Department of Labor 2011
Note: Construction includes construction worker; fabrication includes all types of welders,

Table 8.3.

H2B Visa Certifications/Requests for South Texas, 2000-2010*

Year	Construction	Fabrication	Fishing	Hospitality	Other	Timber

pipe fitters, metal fabricators (see Table 8.4 below); fishing includes fisher, shellfish shucker, deckhand fishing vessel, and such; hospitality industry, for restaurants and hotels, includes kitchen helper, food assembler, housekeeper, and such); timber includes forest workers, tree planters, and such; and other includes everything else.

Table 8.4.

H-2B Visas Certified and Denied in Welding and Fabrication-Related Jobs in South Texas between 2005 and 2008

Year	City	Job Type	Number Certified	Number Denied
2005	Brownsville	Welder Fitter	220	0
2006	Brownsville	Welder Fitter	200	500
2006	Brownsville	Combination Welder	180	0
2006	Brownsville	Gas Welder	200	0
2006	Brownsville	Gun Welder	200	0
2006	Brownsville	Production Line Welder	200	0
2007	Brownsville	Pipe Fitter	400	0
2007	Brownsville	Welder Fitter	0	675
2007	Brownsville	Resistance Machine Welder Setter	55	0
2007	Brownsville	Combination Welder	10	200
2007	Brownsville	Welder, Gun	100	0
2008	Brownsville	Fitter	0	200
2008	Brownsville	Pipe Fitter	250	0
2008	Brownsville	Pipe Fitter Helper	10	0
2008	Brownsville	Welder Fitter	360	755
2008	Brownsville	Combination Welder	0	100
2008	Brownsville	Production Line Welder	0	55
2008	San Benito	Welder Fitter	0	600
2010	Brownsville	Assembler Brazer	0	85

Source: U.S. Department of Labor 2011

8.5.3. Impact of the Hurricanes (2005 and 2008)

Hurricane Dolly, a category 2 hurricane, hit deep South Texas on July 23, 2008. On the day preceding Dolly and for several weeks afterward, normal life was disturbed. As the first major hurricane to cause extensive damage to large portions of the City of Port Isabel since Hurricane Beulah in September 1967, Dolly caught many by surprise. Dolly caused minor to moderate wind damage to roofs, poorly-designed buildings, trees, and power lines and flooding across the

Rio Grande Valley. Work at the Port of Brownsville was stopped and access to Port Isabel and South Padre Island was severely restricted.

8.6. DISCUSSION

The Brownsville area has gone from being a primarily agriculture-dominated area to a community attempting to become more diversified. Many residents once worked as migrant seasonal agricultural workers throughout the Rio Grande Valley and even to parts of the Midwest. Some turned to work in the local fabrication industry, although retail and trade employ the largest number of people. Tourism also continues to be an important industry in the area. South Padre Island caters to "spring breakers" and "winter Texans," retirees who enjoy the weather and relatively inexpensive cost of living in South Texas. Recently, however, the number of tourists coming each year has declined, which, at the time of fieldwork for this study, some observers were already linking to the drug wars on the border (RC055 2008). Since fieldwork ended, drug-related violence and media attention to it have increased significantly and continue to affect the flow of visitors to the region.

The shipbuilding and fabrication industry in this study area is closely tied to the offshore petroleum industry. Prospects for fabrication and shipbuilding, as well as the offshore oil and gas industry in the region, have been uncertain as questions about the development of offshore fields in the western Gulf of Mexico, and how best to service them, have been debated. One large fabricator continues to build and repair oil rigs and platforms, and has been making deliveries on a relatively regular basis (Bloomberg Businessweek 2011). Industry leaders have argued that this south Texas location is advantageous because of proximity to the border for shipment to and from Mexico; infrastructure including rail, natural gas, and security; a productive labor supply; the port's industrial character; and the access to a deep water channel with adequate land area and room to expand (RC053 2008; Nelsen 2008).

This area has the only shipbreaking companies along the Gulf Coast. The shipbreakers respond to different economic signals than shipbuilders. For example, at the time of this study, while fabricators were struggling to manage their businesses in the face of rising steel prices, one of the shipbreakers was dismantling a ship that later brought a record price. Nevertheless, with the economic recession and dramatic fall in commodity prices, the shipbreaking industry, too, began to suffer. The price of scrap steel in June and July 2008 was around $500 per metric ton, but, by October 2008, the price dropped below $100. As a result, work slowed and jobs were cut (Nelsen 2009a, 2009b). As of 2010, four shipbreaking companies remained in the region (The Center for Land Use Interpretation 2010), but at the time of this study only two were qualified to do work for the Maritime Administration; the others worked solely on merchant ships (RC053 2008). The shipbreakers were also diversifying, taking on repair work, and beginning preparations to enter the fabrication industry (RC088 2008).

The statistical analysis for the Brownsville/Port Isabel study region failed to find significant cointegrating relationships among any variables, including the comparison of oil and natural gas prices with the employment and income variables. The only statistically significant results from the distributed lag model suggest that the change in average wages may reflect a cost of living adjustment, which was impacted by increasing energy prices. There was no evidence of statistical relationships between employment and income variables at the MSA level and personal current transfer payments at the county level. Based on the distributed lag model, retirement transfers and unemployment insurance transfers in all three deep South Texas counties were significantly impacted by changes in the manufacturing sector. Additionally, the "total

population" segment also appeared to be significantly impacted by changes in the in the region economy's manufacturing sector. Thus, although manufacturing's share of total employment in the Brownsville/Port Isabel region may be diminishing, changes within the sector have had a significant impact on the socioeconomic well-being of the region's communities, as indicated by changes in the transfer payments and population segments.

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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 the 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 communities.

The Bureau of Ocean Energy Management Mission

The Bureau of Ocean Energy Management (BOEM) works to manage the exploration and development of the nation's offshore resources in a way that appropriately balances economic development, energy independence, and environmental protection through oil and gas leases, renewable energy development and environmental reviews and studies.