

Gulf Intracoastal Waterway







Texas Department of Transportation

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The Honorable Rick Perry, Governor of Texas

The Honorable David Dewhurst, Lieutenant Governor of Texas

The Honorable Joe Straus, Speaker of the Texas House of Representatives

Members of the 82nd Legislature

Prior to 1975, the state of Texas did not have a legislatively designated non-federal sponsor of the Gulf Intracoastal Waterway (GIWW). To fulfill that need, the 64th Texas Legislature enacted the 1975 Texas Coastal Waterway Act, now codified as Transportation Code, Chapter 51. In this Act, the legislature designated the State Highway and Public Transportation Commission, now the Texas Transportation Commission (commission), to act as the state's agent in fulfilling the non-federal sponsorship of the GIWW in Texas.

Through this Act, the legislature also required the commission to continually evaluate the GIWW as it relates to Texas, including assessing the importance of the waterway, identifying principal problems and significant modifications to the waterway, and specifically recommending legislative action, if needed.

TxDOT has conducted the required evaluation and prepared the following report. The report reflects the commission's focus on using and maintaining existing transportation corridors of the state. It is essential that state leaders understand the importance of transportation corridors, such as the waterway, when addressing the safety, maintenance and connectivity concerns of the existing Texas transportation system and the development of future transportation strategies. TxDOT will collaborate with our partners to deliver a modern, inter-connected and multimodal transportation system that enhances the quality of life for Texas citizens and increases the competitive position for Texas industry.

The GIWW Legislative Report is hereby submitted to the 82nd Texas Legislature in accordance with Transportation Code, Section 51.007.

Sincerely,



Amadeo Saenz Jr., P. E.
Executive Director



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Preface

This report, the eighteenth in a series required by the Transportation Code, is submitted by the Texas Department of Transportation (TxDOT) on behalf of the Texas Transportation Commission (commission) to the Eighty-Second Texas Legislature, summarizing the state's sponsorship efforts to maintain the Gulf Intracoastal Waterway (GIWW) in Texas. The GIWW is an essential component of both the state and national transportation network and is an integral part of the Governor's plans for moving Texas forward: "Improving transportation is essential to the safety of our families, a cleaner environment and the long-term health of our economy."¹ Cargo carried on the GIWW reduces congestion on the highway and rail systems, decreasing maintenance costs and extending the life of these systems. In addition, water transportation is the most fuel efficient mode of transportation and produces the smallest amount of air pollutants per ton of cargo carried.

TxDOT Strategic Direction

The TxDOT 2011-2015 Strategic Plan² is our response to the many transportation challenges we face. It defines our mission, vision and values that are the foundation of our commitment to the citizens and businesses of Texas, the Texas Legislature and our TxDOT employees. It identifies short-term goals, objectives and strategies that we will undertake to address the state's multimodal transportation needs. It also defines a set of agency-level performance measures that will hold us accountable for tracking our progress toward achieving the agency's goals. This plan provides a strategic framework to guide TxDOT's transportation planning activities, investments and decision-making over the next five years.

Our Mission

Provide safe and efficient movement of people and goods, enhance economic viability and improve the quality of life for the people that travel in the state of Texas by maintaining existing roadways and collaborating with private and local entities to plan, design, build and maintain expanded transportation infrastructure.

Our Vision

To be a trusted, performance-driven organization committed to collaborating with internal

and external partners to deliver a modern, interconnected and multimodal transportation system that enhances the quality of life for Texas citizens and increases the competitive position for Texas industry.

Our Values - TxDOT will:

- Honor our commitments to the citizens of Texas with accountability and transparency.
- Provide the best value for every dollar spent.
- Earn and maintain the respect and trust of Texas citizens by listening, seeking to understand and being responsive to our customers and stakeholders.
- Promote innovation, creativity and collaboration.
- Promote high ethical conduct and a commitment to compliance with the law with our employees and partners.
- Communicate openly and honestly.
- Protect the safety of the traveling public, our employees and the workers who build, operate and maintain our transportation system.
- Value diversity through inclusion, opportunity and respect.
- Support employee professional development.

Our Goals

The Strategic Plan is organized around six goals that establish the most important areas for action and focus in fulfilling our mission over the next five years.

- Develop an organizational structure and strategies designed to address the future multimodal transportation needs of all Texans.
- Enhance safety for all Texas transportation system users.
- Maintain the existing Texas transportation system.
- Promote congestion relief strategies.
- Enhance system connectivity.
- Facilitate the development and exchange of comprehensive multimodal transportation funding strategies with transportation program and project partners.



Introduction

The Gulf Intracoastal Waterway (GIWW) is a 1,300-mile-long (Figure 1) shallow draft man-made protected waterway that connects ports along the Gulf of Mexico from St. Marks, Florida, to Brownsville, Texas. The Texas Department of Transportation (TxDOT) fulfills the nonfederal sponsorship requirements for the waterway in Texas as described in Chapter 51 of the Transportation Code.

The GIWW is the nation's third busiest inland waterway with the Texas portion

handling over 58 percent of its traffic. In Texas, the GIWW is 423 miles long (Figure 2). In 2008, the Texas portion of the waterway transported over 69 million short tons of cargo with a commercial value of more than \$25 billion. The majority of this cargo, 60.2 million short tons or 87 percent, comprises petroleum and chemical related products. With the state's deep and shallow draft waterways, Texas ranked second in the nation for 2008 in total waterborne tonnage moved in the United States.³



Figure 1 – 1300-mile GIWW

Gulf Intracoastal Waterway in Texas



Figure 2 – Texas GIWW

Benefits Assessment

The development of the Gulf Intracoastal Waterway (GIWW) requires the concerted efforts of federal, state and local interests. Planning associated with this project began over 150 years ago and continues today. One of the initial functions of the GIWW was to provide protected inland transportation of goods and troops during World War II. It has since evolved into a multipurpose waterway used by recreational and commercial interests. Recreational uses include fishing, skiing, sightseeing and protected water transportation routes for travelers along the coast. Commercial uses include the movement of domestic and international cargo, harvesting fish and shellfish, and servicing the gulf and coastal oil and gas industry.

Direct and Indirect Benefits

The GIWW provides important direct and indirect benefits to the state, such as:

- In 2008, 69.15 million short tons (one short ton equals 2,000 pounds) of goods were moved on the Texas GIWW. The estimated value of these goods was over \$25 billion. This was accomplished by approximately 116,944 one-way barge trips.³
- In 2007, the GIWW enabled commercial fishermen to catch an estimated 14.4 million pounds of shrimp, oysters, crabs and finfish with a wholesale value of \$28.9 million from Texas bays and estuaries.⁴
- Barge transportation reduces congestion to the transportation system. The capacity of one barge is equivalent to 15 railcars or 60 trucks.⁵
- Barge transportation is the most fuel efficient mode of transportation. One gallon of fuel moves one ton of cargo 576 miles on the inland waterways, 413 miles on rail, and 155 miles on truck.⁵
- Barge transportation produces less air pollution than similar movements by truck or rail. When comparing the air emissions produced by truck to barges for the cargo movements (ton-miles), barge transportation produces 40 percent less air emissions. (Barge transportation produces 28 percent less air emissions than rail.)⁵
- The movement of goods by barge is a safe mode of transportation. In 2009, according to the Pipeline and Hazardous Materials Safety Administration, the total number of documented hazardous spills in Texas was 58 by air, 972 by highway, 103 by railway, and five by water transportation.⁶

Operational Concerns

The waterway, in its current form, is over 50 years old. During the past 50 years, the size of individual barges and towboats, the width and length of barges lashed together and pushed as a unit (tows), and the volume of traffic have steadily increased. While the base width of the navigable channel is 125 feet at a depth of 12 feet, tows are authorized to travel at a width of 108 feet. When tows must pass each other, they must utilize the waters outside of the authorized channel. In some instances, one tow must hold on the bank of the channel to provide enough space for the other vessels to pass. Given the extensive use of the waterway by fishermen and recreational users, constant activity occurs outside the authorized channel. These factors have led towboat operators, shippers and transportation officials to believe that the 1949 dimensions of the GIWW and its associated structures do not adequately support the state of barge transportation today.

The Brazos River Floodgates and the Colorado River Locks are two lock-type structures on the waterway.⁸ The structures are over 50 years old and are only 75 feet wide. To move through the structures, vessel operators must park their tows, separate the barges, move them through the locks in smaller sets or

individually, and then put them back together on the other side. This process, known as tripping, is inefficient and causes delays estimated in 2008 to cost the towing industry over two million dollars a year at each location.

In February 2009, the Corps restored the mouth of the San Bernard River to its original location by dredging over 340,000 cubic yards of sediment from the sand spit that had formed across the mouth (Figure 3). The blockage caused waters of the San Bernard River to travel eastward through the Brazos River Floodgates, creating hazardous currents that jeopardize commercial navigation (Figure 4). Significant reductions in the velocity of water through the Brazos River Floodgates were evident immediately after the dredge restored the river's connection to the Gulf of Mexico. While the mouth of the San Bernard River is still unstable, moving westward about six feet per day, it is anticipated that currents will remain low through the Brazos River Floodgates for about five years. The United States Army Corps of Engineers Galveston District and the Texas Department of Transportation will monitor the performance of the project and develop appropriate actions as they become necessary.



Figure 3 - San Bernard Dredging Project



Figure 4 – Brazos River Floodgates Hazardous Condition

Barge navigation is also hampered by a shortage of locations for mooring structures, which are a set of buoys outside of the navigable channel to which a barge can be tied or “moored.” These structures are valuable throughout the waterway, especially during high wind and foggy conditions, and in areas where locks or heavy shoreline development dictate one-way traffic flow. Work is on-going to evaluate existing locations and to determine needs for additional mooring structures.

The area in West Galveston Bay, where the GIWW passes beneath the dual Interstate Highway 45 bridges and the Galveston Island Railroad Bridge, is also a major problem (Figure 5). TxDOT finished replacing the dual Interstate Highway 45 bridges in November 2008, creating an opening of over 300 feet for barge traffic

beneath the highway bridges. The opening under the adjacent Galveston Railroad Bridge, however, is only 105-feet wide. This constriction remains the greatest hazard to barge navigation along the entire 1,300 miles of the GIWW.

In April 2009, U.S. Secretary of Homeland Security Janet Napolitano announced that the Galveston Causeway Railroad Bridge Alteration project would receive funding from the American Recovery and Reinvestment Act. Galveston County and the Coast Guard proceeded to develop plans and specifications for the alteration project. On April 8, 2010, they accepted the \$80.1 million bid of Cianbro/Brasfield and Gorrie to widen the bridge from 109 feet to 300 feet, convert the draw bridge into a lift bridge system and make other improvements. Construction is estimated to take three years.



Figure 5 – Galveston Causeway

Recent Activities

During the last biennium, TxDOT has participated in various activities to support the waterway. These included initiating federal and state studies and research projects, performing maintenance dredging projects, resolving dredged material disposal property issues and implementing a national estuary research reserve.

Studies and Research

Under the authority of the Flood Control Act of 1970, the Corps has initiated various Section 216 Studies. These studies look at

specific water resources projects that may have changed because of physical or economic reasons and develop recommendations to improve the function or operation of the projects. TxDOT acts as the non-federal sponsor for the studies involving the GIWW in Texas.

The Corps has divided the Texas portion of the GIWW into five separate Section 216 study areas. These areas have been further divided into six studies that focus on complex or unique problems. Figure 6 illustrates the Section 216 Studies in Texas.

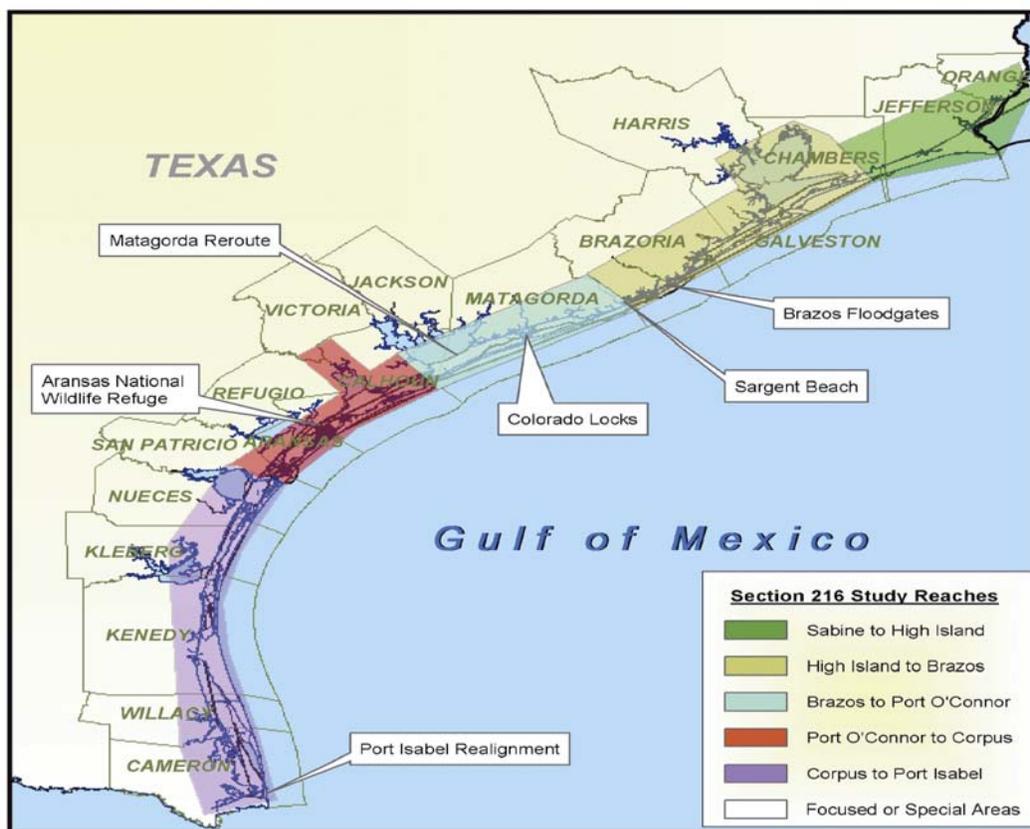


Figure 6 – Section 216 Study Areas

Currently, there are six active Section 216 Studies. The cost to complete these studies is estimated at \$29.5 million, of which \$17 million in additional funding is needed. In FY 2009, three of these studies were funded, receiving a total of \$669,000 in federal funding. In FY 2010, one study received \$170,000 in federal funding. The Corps completed the Port Isabel Realignment Study and anticipates publishing the report in the fall of 2010.

In addition to participating in the federal Section 216 Studies, TxDOT has initiated various marine transportation-related studies, including several conducted through TxDOT's research program. This program, plus interagency agreements, allowed TxDOT to study various GIWW issues. Recent research studies funded by TxDOT are shown in Table 1-1.

Dredged Material Disposal Property Acquisition

After receiving a formal request from the Corps in 1998, TxDOT completed in FY 2010 the acquisition of 242 acres in Galveston County necessary for the disposal of dredged material from the GIWW. The final price was \$1.8 million, excluding associated court and interest costs.

Maintenance Dredging Activities

During FY 2009, the Corps expended approximately \$57,270,000 in federal funds in 100 percent federally contracted and funded projects to operate and maintain the structures and navigability of the Texas GIWW. Approximately 9,520,000 cubic yards of sediment were dredged in five separate projects. Of this material,

TxDOT Sponsored Research

Table 1-1

PROGRAM	STUDY	RESEARCHER(S)
State Planning Research	Containerized Freight Movement in Texas (completed)	University of Texas, Center for Transportation Research
State Planning Research	Development of a Comprehensive Urban Commodity/Freight Movement Model for Texas (completed)	Texas A&M University, Texas Transportation Institute
State Planning Research	Short Sea Shipping Initiatives and the Impacts of the Texas Transportation System (completed)	University of Texas, Center for Transportation Research and Texas A&M University, Texas Transportation Institute
State Planning Research	An Analysis of the Value of Texas Seaports in an Environment of Increasing Global Trade (completed)	University of Texas, Center for Transportation Research and Texas A&M University, Texas Transportation Institute
State Planning Research	Potential Policies and Incentives to Encourage Movement of Containerized Freight on Texas Inland Waterways (completed)	University of Texas, Center for Transportation Research and Texas A&M University, Texas Transportation Institute
State Planning Research	Impacts of Dray System along Ports, Intermodal Yards and Border Ports of Entry (completed)	University of Texas, Center for Transportation Research and Texas A&M University, Texas Transportation Institute
State Planning Research	Emerging Trade Corridors and Texas Transportation Planning (completed)	University of Texas, Center for Transportation Research

approximately 4,150,000 cubic yards were placed in confined placement sites, 3,608,000 cubic yards were placed in open-bay sites and 1,762,000 cubic yards were used beneficially.⁹ Figure 7 depicts the relative volumes that were removed and the location along the waterway.

During FY 2010, the Corps expended approximately \$36,600,000 in federal funds in 100 percent federally contracted and funded projects to operate and

maintain the structures and navigability of the Texas GIWW. Approximately 5,020,000 cubic yards of sediment were dredged in three separate projects. Of this material, approximately 967,000 cubic yards were placed in confined placement sites, 3,650,000 cubic yards were placed in open-bay sites and 403,000 cubic yards were used beneficially.⁹ Figure 7 depicts the volume of dredged materials removed from each location along the waterway.

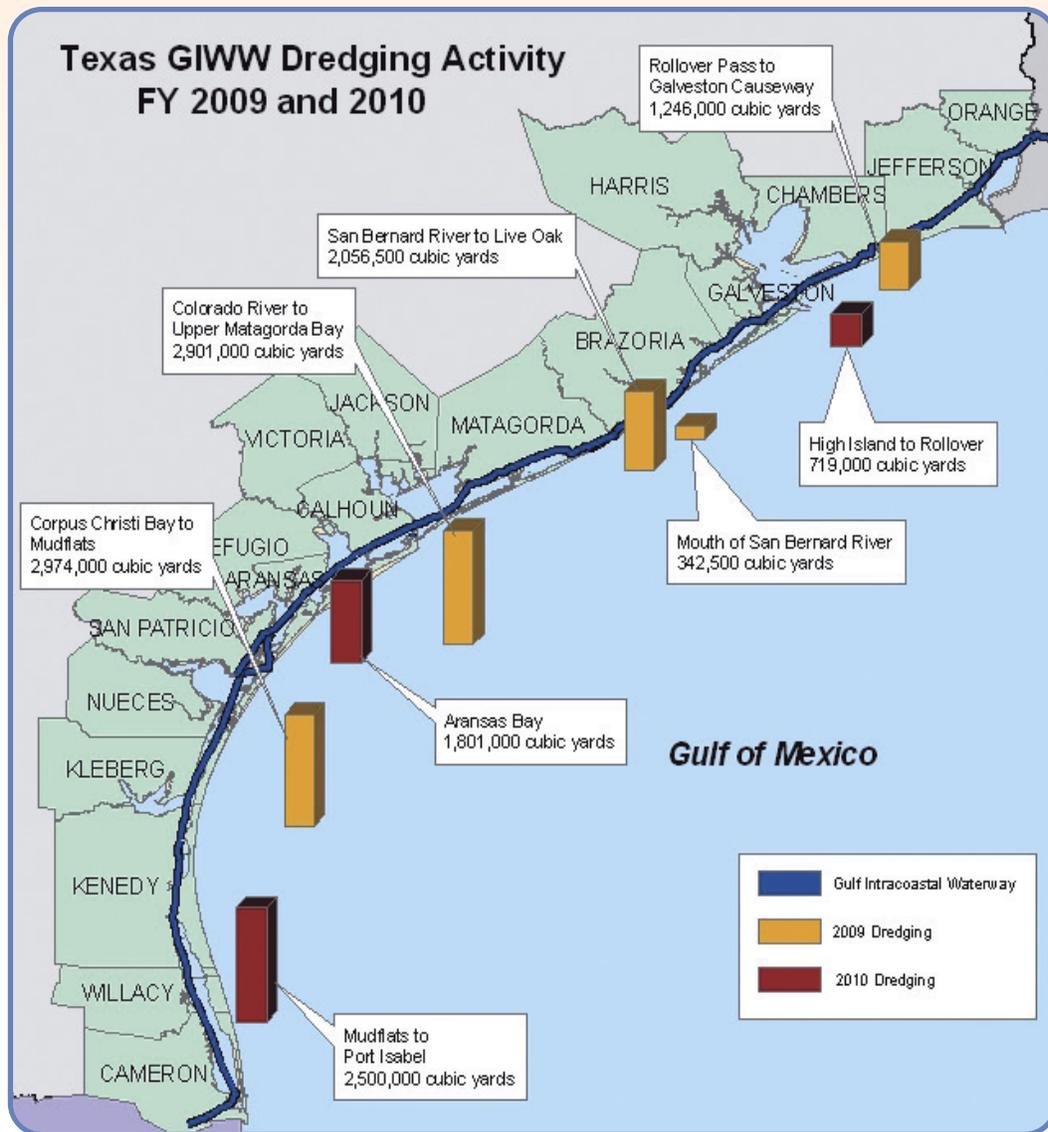


Figure 7 – FY 2009 and 2010 Dredging

Issues of Concern

There are funding, regulatory and management issues of legislative concern related to current and future operations of the GIWW.

The Corps has not received adequate federal operations and maintenance funding to maintain the waterway as designed. Dredging costs have rapidly escalated with increases in the price of oil and the scarcity of equipment due to the increased activity necessitated by major storms. Because its budget has not increased to offset this rise in dredging costs, the Corps has had to defer or downsize its projects. As a result, the Corps has not been able to maintain the entire waterway to its authorized depth. In response to a shallower waterway, barge operators are transporting smaller loads, which increases shipping costs. The Texas Transportation Institute estimates that for every ton left behind due to draft restrictions, there is an increase in transportation costs of at least \$0.035/ton

mile.¹⁰ For example with about 28 billion ton miles traveled on the Texas GIWW in 2008, reducing capacity by 10 percent increases transportation costs by \$98 million. Continued degradation of the state's water transportation infrastructure and associated increases in transportation costs economically impact businesses that depend on water transportation such as the chemical and petrochemical industries.

Our state's rapidly growing population has spurred development of private property (Figure 8) along navigable waterways. The number of marinas, residential subdivisions, docks, piers and other shoreline developments have dramatically increased throughout the coastal regions of the state. Safety issues arise as more projects are developed and navigation channels become more restricted and congested. The economic and transportation benefits of the GIWW could be reduced unless the state and local governments consider and minimize



Figure 8 – Development along the GIWW

adverse navigational impacts associated with future development. TxDOT has discussed this issue with the councils of the Texas Coastal Management Program. They recommended addressing these concerns during the comment period for Corps of Engineers permit requests. The Corps of Engineers has agreed to evaluate navigational concerns, but their ability, and that of the state and local governments to control shoreline development along navigable waterways has been limited. The question of how to appropriately balance shoreline development, public use and navigation interests remains unresolved.

Finally, as the non-federal sponsor of the GIWW, one of TxDOT's primary duties is to provide lands, easements, rights of way, relocations and necessary disposal areas for maintenance and operation of the GIWW. As part of a 50-year GIWW dredged material management plan, there are over 200 designated disposal areas along the GIWW in Texas. These sites were established as the least costly, environmentally acceptable long-term dredged material placement areas for maintenance of the GIWW. In addition to

these sites, there are numerous areas where dredged material can be used beneficially. Developing marshes (Figure 9) or replenishing eroding gulf beaches are highly desirable projects to the state. Inconsistent federal and state environmental coordination, a lack of incentives and the high cost of developing projects hinder the development of these projects.

To support the state's non-federal sponsorship of the GIWW in Texas and facilitate planning, maintenance, preservation, research and improvement of the waterway, the Texas Legislature should consider the following actions:

- **Continuing to recognize and promote the Gulf Intracoastal Waterway as an integral and valuable part of the state's multimodal transportation system by providing the financial resources to accomplish the non-federal sponsor's responsibilities in the areas of acquisition of placement areas and development of beneficial use of dredged material projects, and**
- **Urging Congress to increase the Corps of Engineers Operations and Maintenance budget for Texas.**



Figure 9 – West Galveston Bay Marsh Creation Site

Works Cited

- 1 Office of the Governor, Gov. Perry's Principals for a Stronger Texas, <http://governor.state.tx.us/priorities/>
- 2 Texas Department of Transportation, Strategic Plan 2011 - 2015
- 3 U.S. Army Corps of Engineers, Waterborne Commerce Statistics Center, Waterborne Commerce of the United States, 2008
- 4 Texas Parks and Wildlife, Coastal Fisheries Division, 2007 Texas Bay System Commercial Fishery Landings
- 5 Texas Transportation Institute, Center for Ports and Waterways, A Modal Comparison of Domestic Freight Transportation Effects on the General Public, 2007
- 6 U.S. Department of Transportation, Pipeline and Hazardous Materials Safety Administration, 2009 Incident Reports: HAZMAT
- 7 U.S. Army Corps of Engineers, Galveston District, GIWW Modifications, Texas, Section 905 (b) (WRDA 86) Analysis
- 8 Gulf Intracoastal Canal Association, The Connecting Link, Vol. 6, Issue 1
- 9 U.S. Army Corps of Engineers, Galveston District, Various Project Specifications for Dredging, 2009 - 2010
- 10 Texas Transportation Institute, Center for Ports and Waterways, C. J. Kruse Presentation, 2007 Gulf Intracoastal Canal Association Annual Meeting



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